

DIV. OF FISHES

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UNITED STATES
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FISH AND WILDLIFE SERVICE

CLARENCE F. PAUTZKE, COMMISSIONER

BUREAU OF COMMERCIAL FISHERIES

DONALD L. MCKERNAN, DIRECTOR

DIVISION OF RESOURCE DEVELOPMENT

RALPH C. BAKER, ASST. DIRECTOR



COMMERCIAL FISHERIES REVIEW



A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor

G. A. Albano and H. Beasley, Assistant Editors

Address correspondence and requests to the: Chief, Fishery Market News Service, U. S. Bureau of Commercial Fisheries, 1815 North Fort Myer Drive, Room 510, Arlington, Va. 22209.

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5/31/68

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COVER: Acadia Albatross, the largest trawler ever built in Canada. Launched November 23, 1964, in Lauzon, Quebec, the 152-foot stern-trawler is said to be capable of catching 7 million pounds of fish a year. Special features are a shelter deck which permits fish handling under cover and conveyor belts which carry cleaned fish to insulated holds (see page 62.)

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Editorial Assistants: Ruth V. Keefe and Jean Zalevsky

Sr. Compositor: Alma Greene

Jr. Compositors: Mary Andrews and Mary Donaldson

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SOVIET AND JAPANESE FISHING ACTIVITY OFF ALASKA IN 1964

By Ronald C. Naab*

BACKGROUND

The massive build-up of foreign fisheries in international waters off Alaska continues. Last year well over 1,000 of the world's most modern fishing and auxiliary vessels from Japan and the Soviet Union ranged in the offshore waters along Alaska's vast coastline, catching millions of tons of fish and whales.

Several years ago as those foreign fisheries began to expand, the U. S. Bureau of Commercial Fisheries and the U. S. Coast Guard initiated cooperative patrols off Alaska. Coast Guard ships and aircraft capable of prolonged high-seas patrol are accompanied by Bureau agents who provide specialized fisheries knowledge. These cooperative patrols are augmented by one Bureau of Commercial Fisheries patrol boat which concentrates on areas closer inshore. The patrols enforce provisions of several international fisheries agreements and also gather information on foreign fisheries which are not subject to current agreements. Information on extra-treaty foreign fisheries is essential to determine their impact upon United States interests.

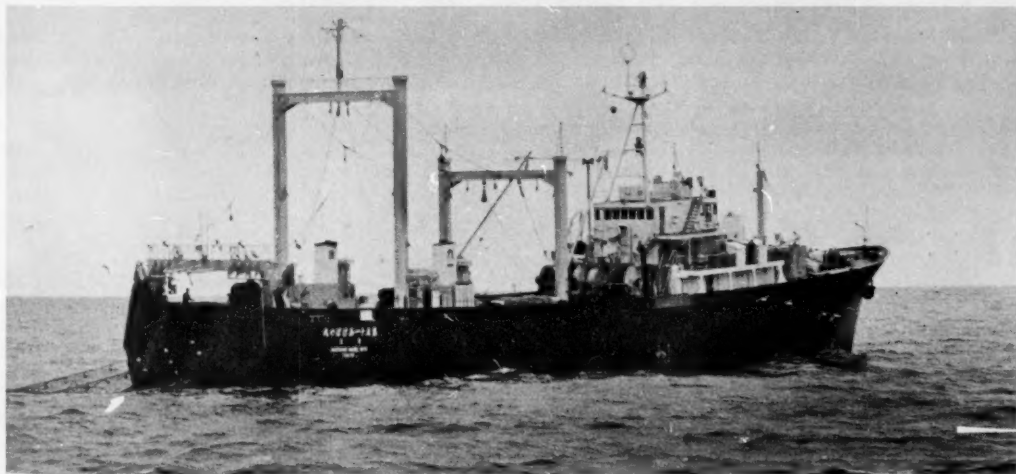


Fig. 1 - Trawl being hauled up the stern ramp of a 260-foot Japanese factory trawler in the eastern Bering Sea. The Japanese are rapidly adding to their fleets more of these highly capable ships which catch and process fish without need of accompanying factoryships.

*Fisheries Management Supervisor, U. S. Bureau of Commercial Fisheries, Juneau, Alaska.

U. S. DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Sep. No. 732

The cooperative patrols have been bolstered each year to keep pace with the expanding foreign fisheries. In 1964 five Coast Guard cutters and the Bureau's John R. Manning covered 60,000 miles on fisheries patrols of the eastern North Pacific and Bering Sea. The surface patrol units were augmented by nearly 150,000 miles of long-range aircraft patrols from Coast Guard Air Stations.

JAPANESE OPERATIONS

About 700 vessels were dispatched from Japan in 1964 to engage in fisheries of interest to United States, especially Alaska, fishery interests. Included were the Japanese high-seas salmon fishing fleets composed of 11 factoryships and 369 accompanying gill-net vessels.

FISH MEAL AND OIL FISHERY: The Japanese fish meal and oil fleets in the eastern Bering Sea last year consisted of five factoryships accompanied by nearly 150 trawlers. The first of those fleets appeared north of the Pribilof Islands in mid-April and by the end of May all five fleets were working in the eastern Bering Sea. A gradual northwest movement began in June and by the end of July the fleets had moved to the western Bering Sea. They remained off Siberia until late August when they again returned to the eastern Bering Sea for a short period, completed their catch quotas, and returned to Japan in early September.



Fig. 2 - The deck of a Japanese factoryship is covered to a depth of several feet with flounder and sole caught in the eastern Bering Sea near Bristol Bay. Fleets of trawlers deliver their catches to the factoryship, where the fish are reduced to meal and oil within a few hours. Workers selecting larger fish which are frozen for human consumption wear snowshoe-like boards on their feet to keep them from sinking into the mass of fish.

KING CRAB FISHERY: The 1964 Japanese king crab fishery off Alaska was composed of two factoryships, each accompanied by six tangle-net setting vessels. Each factoryship carried aboard about eight small boats used for hauling and picking the tangle nets. The king crab fleets arrived north of the Alaska Peninsula in March and remained in that general area until fulfilling their catch quotas in September of 235,000 cases of canned crab meat.

SHRIMP FISHERY: A shrimp factoryship with 12 accompanying trawlers operated in the eastern Bering Sea essentially throughout 1964. During the winter period when ice conditions prevented operations in the proven shrimping areas north of the Pribilofs, the fleet moved south to near Unimak Pass and fished primarily for Pacific ocean perch. A second shrimp factoryship, also accompanied by 12 trawlers, joined the fishery in April and operated generally north of the Pribilofs. The fleet departed for Japan in September.

HALIBUT AND SABLEFISH FISHERY: The Japanese employed seven long-line fishing vessels, one of which also served as a processor, in the halibut fishery of the eastern Bering Sea in 1964. They fished in the controversial Triangle area when the season opened in March and, just as did the North Americans, found their halibut catches extremely low. The Japanese shortly shifted their efforts to other species, primarily sablefish and rockfish. This alternative also proved fruitless and by late April the Japanese long-line fleet abandoned the eastern Bering Sea and moved to grounds off Siberia. They did not return to the areas off Alaska.

An unexpected development this past year was the appearance of seven Japanese long-line fishing vessels in the Gulf of Alaska in the vicinity of Kodiak Island. It was found that those vessels were making excellent catches of sablefish, with some rockfish. There were no indications that salmon or halibut were caught.

The Japanese Government requires that vessels be licensed to fish in the Gulf of Alaska. Information on the Japanese vessels licensed to fish off Alaska revealed the long-line vessels were not authorized to operate in the Gulf of Alaska. Complete information on these vessels was forwarded through appropriate channels to the Government of Japan for its consideration and appropriate action.

WHALING: The level of Japanese whaling in the eastern North Pacific in 1964 was the same as in the past few years. Their fleets were comprised of three whale factoryships, each accompanied by seven whale killer vessels. Japanese whalers were active from late May into August and roamed from the western Aleutians to waters off southeast Alaska.

SALMON FISHERY: The Japanese high-seas salmon fishery in 1964 included 11 factoryships with 369 gill-net fishing vessels. The fleets deviated considerably from past patterns of operation, reportedly because of low catches. In the latter part of July and early August at least one fleet moved into the area near Adak close to the International North Pacific Fisheries Convention salmon abstention line of 175° West Longitude.

GULF OF ALASKA FISHERIES: In 1964 the Japanese licensed six trawlers to operate in the Gulf of Alaska. Included were 4 factory stern trawlers which fished primarily for Pacific ocean perch and 2 smaller side trawlers which fished for shrimp. The stern trawlers ranged from near the Shumagin Islands eastward to about Middleton Island, while the side trawlers concentrated in a limited area off southwest Kodiak Island. The first of the trawlers appeared in the Gulf in May and all ended operations by the end of October. Bureau of Commercial Fisheries observers accompanied 3 of the stern trawlers to gather biological data on the effects of their trawling upon halibut and king crab.

U.S.S.R. FISHERIES

Soviet fishing efforts off Alaska were increased for the fifth consecutive year in 1964 and expanded into new species and areas. More than 500 Soviet vessels were associated with the fisheries of the Alaskan area.

HERRING FISHERY: One of the major Soviet fisheries for the past few years has been their winter trawling efforts for herring, generally north and west of the Pribilof Islands. In 1964 that fishery began in January and by early February it included more than 150 Soviet vessels. The herring fleet continued at about the same level until April, when they dispersed to other fisheries, reportedly because of adverse sea ice conditions.



Fig. 3 - Massive Soviet fishing fleets operate off Alaska throughout the year. During the winter, their trawling fleets fish along the edges of the ice pack in the eastern Bering Sea and move deeper into the pack to obtain shelter from the severe storms common in the area.

PACIFIC OCEAN PERCH FISHERY: As in past years, the Pacific ocean perch stocks off Alaska were a major objective of Soviet fishing efforts in 1964. The first of the ocean perch fleets appeared in the Gulf of Alaska off Yakutat in March when the herring fishery in the eastern Bering Sea began to disperse. By May the number of vessels involved in that fishery exceeded 150 and they were operating in the area from Albatross Bank southwest of Kodiak to off Yakutat in the eastern Gulf of Alaska. The strength of the ocean perch trawl fleets began to decline in June, reportedly due to the diversion of vessels to a highly productive saury fishery off Siberia, and by October the fleets numbered fewer than 20 vessels. Contrary to their operation in past years, the Soviets did not withdraw their fleets from the Gulf of Alaska with the onset of adverse winter weather but maintained a trawl fleet of 15 to 25 ships in the general area off Yakutat throughout 1964. The effort devoted to ocean perch marked the first time the Soviets maintained a fishery in the Gulf of Alaska during the treacherous winter period.

KING CRAB FISHERY: In 1964 the Soviets used three ultramodern factoryships in the king crab fishery near Alaska. Each of the factoryships was accompanied by three tangle-net setting trawlers. Two scouting trawlers explored for the fishery. Each factoryship carried 12 small boats from which the tangle nets were picked. The Soviet king crab fishery in 1964 operated in the outer Bristol Bay flats area from near Port Moller to Unimak Pass during the period April through July, when the fishery was ended. One of the crab factoryships unexpectedly appeared near Chirikof Island southwest of Kodiak in early April. The Department of State immediately protested this king crab tangle-net fishery in the Gulf of Alaska. Within two weeks the factoryship had returned to the Bering Sea. There was no further Soviet king crab fishing in 1964 in the Gulf of Alaska.

WHALING: Last year four Soviet whale factoryships, accompanied by nearly 50 whale killer ships, harvested whale stocks near Alaska. The whalers appeared off Alaska in June and ranged from the western Aleutians to south of Alaska's panhandle until their withdrawal in October. An interesting development in 1964 was the operation of two whaling fleets near the Pribilof Islands during August and September.

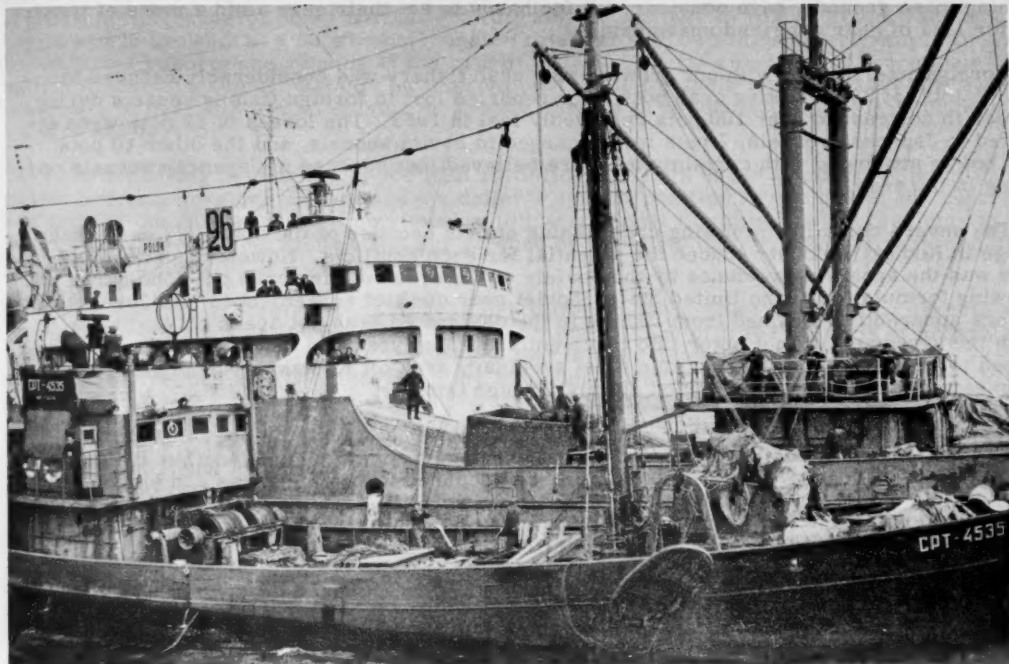


Fig. 4 - A Soviet SRT-type trawler delivering its catch of Pacific ocean perch to a refrigerated ship where the fish are frozen and later transported to the Soviet Union. Soviet fishing vessels such as these are becoming a common sight in offshore waters along much of Alaska's vast coastline.

SHRIMP FISHERY: For several years the Soviets have voiced an interest in starting a shrimp fishery off Alaska. Unconfirmed reports indicate that a limited shrimp fishery was begun in 1963. In 1964 the Soviets definitely conducted a trawl fishery for shrimp off Alaska. In April of 1964 two large Soviet trawlers of a new type were observed shrimp fishing near the Pribilof Islands in the same region now traditionally fished by the Japanese shrimp fleets. That fishery was apparently ended by June. However, in late October two more of those new trawlers were observed fishing shrimp southwest of Kodiak, an area also fished for shrimp by the Japanese. This Soviet shrimp fishery off Kodiak was terminated in December.

FOREIGN INTERFERENCE WITH U. S. FISHING ACTIVITIES

Continued expansion of the foreign fleets has brought them into areas where they overlap with United States fisheries and has periodically resulted in interference with our fisheries. This interference is of two general types: damage or loss of U. S. fishing gear caused by foreign vessels and denial of fishing areas to U. S. fishermen caused by the presence of large numbers of foreign vessels on desirable grounds. Thus far the Alaskan king crab and halibut fishermen who operate fixed fishing gear far offshore have felt the brunt of the foreign fleets on the high seas.

All reported interference with U. S. fishing activities by foreign fishing vessels in 1964 occurred in the Gulf of Alaska, primarily in the region off Kodiak. Six such incidents were reported by halibut fishermen and most of their complaints were directed at Soviet trawlers. A frequently voiced problem was the occupation by Soviet fleets of established halibut fishing grounds. The Russian trawling fleets have found the edges of Fairweather, Portlock, and Albatross Banks productive for Pacific ocean perch. Quite often our halibut fishermen, upon reaching those grounds, have considered it foolhardy to set their gear amid a mass of trawlers, for loss of gear appeared unavoidable.

Foreign interference with our growing king crab fishery was considerably reduced in 1964. A total of 29 U. S. king crab pots were reported lost to foreign fishing vessels during the year in contrast to over 100 pots reportedly lost in 1963. The losses of 12 pots were attributed to Japanese vessels, 7 pots were charged to Soviet vessels, and the other 10 pots could not be attributed with certainty but were believed lost because of Japanese vessels operating in the area.

The severe curtailment of king crab fishing efforts because of the March 27 earthquake damage in Kodiak no doubt reduced the potential for such conflicts. However, another major factor was the apparent avoidance by the Soviets of the areas of king crab pot concentrations. Following formulation of the United States-Soviet gear conflict agreement in late June, Soviet trawlers apparently refrained from fishing in the designated crab pot areas off Kodiak, although the agreement did not enter into force until late last year. In fact, the only pot losses charged to the Soviets occurred within a pot sanctuary area off Kodiak in November--after the agreed upon pot protection period of July through October.

Japanese trawlers, on the other hand, consistently fished within the pot concentration areas as designated by the United States-Soviet agreement, primarily off southwest Kodiak Island. All the pot losses charged to the Japanese occurred within the areas and period designated by the United States-Soviet pact. Of interest were the arrangements made by the Taiyo Fishing Company, through an Anchorage subsidiary, to compensate United States fishermen for king crab pots lost to Japanese trawlers in the Gulf of Alaska.



Created in 1849, the Department of the Interior--a department of conservation--is concerned with the management, conservation, and development of the Nation's water, fish, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States--now and in the future.

THE TRADE EXPANSION ACT AND THE KENNEDY ROUND^{1/}

By Louis C. Krauthoff II*

This year Americans will turn out more than \$600 billion worth of goods and services. And if our projections are correct, within 15 years our economy will turn out \$1 trillion worth of products--allowing for just a normal growth rate. In the last 15 years, world trade has tripled and is growing at a substantially faster rate than our own internal economy. Today, United States exports are running at the rate of over \$22 billion annually and more than 4.5 million Americans depend directly on international trade for their jobs. Imports are running at the rate of over \$18 billion leaving us a trade surplus of around \$3.6 billion--excluding military aid expenditures.

I am not trying to overwhelm you with statistics, but I am eager to make the point that the figures are encouraging. Because of the dollar's special position as one of two key currencies and the pivotal dollar-gold relationship to international liquidity, the average man in the street hears a great deal more about our balance of payments deficit, than our very comfortable trade surplus.

Let me state the foreign trade figures in a different way. The United States exports about 20 percent more than we import. It is this favorable balance of trade which is at present helping to support U. S. foreign policy abroad and that is very directly connected with our 30-year campaign to "reduce tariffs" referred to by President Johnson in his Economic Report to the Congress last year. The early cornerstone of this campaign was the Reciprocal Trade Agreements program which was fathered by Cordell Hull in the depths of the great depression when the value of world trade had dropped by two-thirds, strangled by the combined effects of worldwide depression and mounting trade barriers. Our own country had been especially hard-hit because our share of world trade declined even more than the average. Thus, in 1934, we assumed leadership in a program for worldwide reduction of tariffs on a reciprocal basis. The result was that, leaving aside the free list, the average duty paid on imports was reduced from over 50 percent in the early 1930's to around 11 percent in 1960.

United States initiative and trade liberalization which has done so much to strengthen the free world culminated in the passage of the Trade Expansion Act in 1962. We are entering the most important phase of the trade negotiations made possible by that Act. These are being called the Kennedy Round of negotiations and are being conducted in Geneva under the auspices of the General Agreement on Tariffs and Trade--commonly called the GATT. In the current negotiations the United States is seeking linear tariff reductions on broad categories of industrial goods which will be coupled with the negotiations later on in the year on agricultural products. Briefly, the economic basis for the U. S. search for broad tariff reduction is:

1. U. S. jobs depend on world trade.
2. U. S. farm products need foreign markets.
3. U. S. industry needs exports.
4. Since prosperous industrialized nations are the best customers for U. S. exports, it is in our long-run interest to foster the growth of the newly emerging nations by trading with them and accepting their trade.
5. Foreign trade is vital to U. S. security.

*Chairman, Trade Information Committee, Office of the Special Representative for Trade Negotiations, Executive Office of the President, Washington, D. C.

^{1/}Address before the National Menhaden Association, Old Point Comfort, Va., Feb. 23, 1965.

6. Expanded foreign trade is essential to an expanding economy in the U. S.
7. Exports tend to cushion U. S. economic recessions.
8. If we are inhospitable to receiving the goods of other nations--especially the emerging and uncommitted nations--they are likely to turn to the Sino-Soviet bloc for the trade (and other ties).
9. A liberal trade policy toward the recipients of our foreign aid is imperative to help them (a) stand on their own feet and (b) repay our aid loans ultimately.
10. The freer the trade, the better the allocation of resources.
11. Imports give the consumer a break by providing a greater variety of products and cheaper products.
12. Imports are necessary to furnish the dollars other countries need in order to buy our exports.

These negotiations will be the most important and comprehensive trade negotiations ever held. More countries are taking part in them than ever before--and the field they cover is extremely wide, including not only industrial but agricultural and primary products and not only tariffs but nontariff barriers as well.

One reason the President was given the important tariff-cutting authority in the Trade Expansion Act--and hence the main thrust of the present Kennedy Round--is to give our country some leverage in negotiating down the Common External Tariff of the European Economic Community. The economic importance of the emergence of the EEC as a single trading unit would be very dangerous for us to underestimate. "No army," wrote Victor Hugo in post-Napoleonic Europe, "can withstand the strength of an idea whose time has come." Great armies have marched across Europe, attempting to enforce unity under hegemony of Imperial Rome, revolutionary Paris, the Holy Roman Empire, and most recently, Communist Moscow. Religious crusaders, too, have tried to impose upon diverse peoples and cultures a common "European" consciousness. Yet any European unity born of coercion, shortly disintegrated.

Today, however, Europe west of the Iron Curtain is moving toward unity, propelled by an idea backed voluntarily by free men and nations, and warmly supported by the United States. France, West Germany, Italy, Belgium, Luxembourg, and the Netherlands, organized as the European Economic Community (EEC), are steadily reducing trade restrictions among themselves toward the eventual goal of completely free movement of men, goods, and capital, and are erecting a common tariff wall against outsiders. It is already a pretty safe bet to hazard a guess that the Treaty of Versailles in 1918, which failed to change much that was fundamental to Old Europe, will not be as long remembered by schoolboys of the 21st century as the Treaty of Rome which brought into being this new European Common Market.

As the year progresses, you will be reading more and more about the Kennedy Round in your newspapers even though some of it may be buried close to the bond section on the business page.

Last Thursday there was a good editorial in The New York Times that forecast our summer negotiating outlook as "long and hot" followed by even tougher negotiations in the fall. The paper congratulated us on our patient approach, which Governor Herter's office feels is so essential, since the significance of the negotiations transcends guilders and dollars, pounds, francs, or deutschmarks. If we succeed, we can lay a solid economic foundation for an enduring partnership for peace and progress, embracing not only the Atlantic nations but the developing countries of Asia, Africa, and Latin America. If by any chance we fail, I fear that we may leave the Atlantic nations dangerously divided into rival trade blocs, and we may gravely and perilously disappoint the developing nations in their desire to earn, through expanded trade, more of the resources they urgently need for their development.

You may have read recently about some of the strains and stresses of the recently finished "Confrontation and Justification" exercise in relation to the main GATT partners' exceptions lists. Also, there have been stories about Governor Herter's recent trip to Geneva and Brussels in his continuing attempt to persuade the EEC to adopt a more flexible policy in their approach to agricultural negotiations. These represent almost predictable ups and downs in the international trade bargaining pattern. It will be continually important to remember that the turbulence so evident on the surface of the trading world in recent months, although severe, is not altogether unusual nor can it be expected at any time to subside entirely. This is, after all, a period of profound change marked by the efforts of Europe to move to a new identity, a new institutional structure, and a new set of relations among its several parts and with the outside world. As this process unfolds, it is natural to expect divergent and contending views as to the role, identity, and nature of the new Europe.

The developments in the EEC have a real interest for your industry. As most of you know the Community has recently been taking a substantial portion of your menhaden oil exports for use in margarine and soap manufacture.

In 1962, 44 percent went to the Community directly, and 46 percent went to the United Kingdom, Sweden, and Norway, members of the other regional trading group in Europe known as the European Free Trade Association (EFTA) who are also involved in the Kennedy Round. Although the exports to the EEC went down in 1963, the EFTA share went up, especially that of the United Kingdom--and, more importantly, so did prices.

The EEC also absorbs large exports of fish meal from Chile and Peru which might otherwise overhang your own now fairly stable market for fish meal in the United States. So interests in the new Common Market cannot be lightly written off.

Despite the fact that last year was the worst year the menhaden industry has had since 1958 in terms of volume of catch, overall exports for the first 11 months were above average. I am sure you would like to obtain reductions in the duties on menhaden oil from the 17.5 percent in Canada and the 10 percent in the United Kingdom and would share our alarm if there were any sign of a duty being imposed by the EEC. Also, I know you want our negotiators to bear in mind what heavy import years like 1962 can do to the stability of the structure of the domestic market, particularly on the West Coast.

Let us now turn our attention to the more general aspects of the Trade Expansion Act which set the stage for the Kennedy Round which is just getting under way in Geneva. The Act created the post of a trade czar who was to be called the Special Representative for Trade Negotiations. Governor Herter was appointed to this post and today chairs a Cabinet-level Committee, the Trade Expansion Act Advisory Committee (TEAAC). He has a staff of 27 on which I serve. The preparations for the negotiations started in earnest in December of 1963 with simultaneous public hearings before the Tariff Commission and the Trade Information Committee, an inter-agency Committee. During the four months of these hearings, hundreds of briefs were submitted and hundreds of witnesses made personal appearances--most of them, of course, representing industrial interests. I should like to express at this time my great appreciation for the thought and effort which many industries devoted to the preparation of their briefs and their testimony. Your own menhaden interests were most ably represented before the Trade Information Committee.

All of this information was digested and analyzed by the Government agencies concerned. It was supplemented by special studies, some of them very extensive indeed, conducted by our Office or by other Government agencies. Thus, when the process of formulating the U. S. exceptions list began within Government, it was against a background of factual information that was both wide and deep.

This process continued with the Trade Staff Committee, an inter-agency Committee chaired by a representative of our Office. Seven Departments were represented on this Committee by senior members of their staffs--Commerce, State, Agriculture, Labor, Interior, Defense, and the Treasury, plus a non-voting representative of the Tariff Commission.

Recommendations then go on through higher levels with the relevant government agencies involved through the constant coordination and guidance of Governor Herter or his staff. Thus our negotiating positions vis-a-vis our trading partners are very carefully arrived at and involve literally hundreds of experienced Government officials as well as representatives of the business community.

There will be more U. S. business involvement in the Kennedy Round than in any previous tariff negotiations. Indeed, the Trade Expansion Act specifically requires us to seek information and advice from representatives of industry, agriculture, and labor. To fulfill the letter and spirit of this legal requirement, two major steps have been taken.

First, the President has appointed, upon Governor Herter's recommendation, a Public Advisory Committee on Trade Negotiations, consisting of 45 prominent citizens--leaders in industry, agriculture, labor, the professions, and consumer affairs. As you know, the Executive Secretary of the National Menhaden Association is a member of this Committee. Members of this Committee serve as individuals rather than as representatives of their special fields of interest. They have met a number of times so far and meet again March 4. On each occasion they have received an up-to-date briefing on the progress of the negotiations and have been consulted on the most important pending policy questions. We have benefited very much from these give-and-take discussions, and I hope that the members of the Committee feel that they have as well.

Second, a Roster of Technical Specialists drawn from industry, agriculture, labor, and consumer organizations has been established. Their chief function will be to provide our negotiators with factual information (economic, technological, marketing, et cetera) that is relevant to the negotiations.

When we need specialized information in any given field to supplement or update the large amount of information already gathered by our office through the public hearings and from other Government agencies, we shall ask the technical specialists concerned to provide it. As you may know, the General Manager of the National Fisheries Institute is one of our ten technical specialists in the fish industry. Three other gentlemen recommended by the Institute are also on our Roster.

In concluding, I should like to make a guess that the negotiations which I have been discussing will take another year or more to complete. Our main focus will be achieving reciprocity or a balanced agreement among the participants. Although reciprocity is a rather nebulous concept for which there are no precise standards, the negotiations will involve the shortening and lengthening of exceptions and offer lists until, finally, countries are satisfied, in the context of the overall negotiations, that a satisfactory "deal" has been made.

We are prudently optimistic that the negotiations will be a success. Despite the past and prospective crises in the Kennedy Round, it appears that no country really wants the negotiations to fail. Their failure would have more than economic consequences. Not only would the opportunity for the world's most extensive liberalization of trade barriers be missed, but a severe blow would be dealt to hopes for strengthening the Atlantic partnership.

It is not claimed that the Kennedy Round will solve all our problems but it is a good framework to advance the solution of many international economic ones. All the free world problems cannot be solved this year or the next. But we must continue to try for equitable solutions. Hagglng is better than fighting. The doctrine of comparative advantages assures us that it will mutually benefit participating nations in foreign trade. As President Kennedy liked to say, a rising tide lifts all boats.



TRENDS AND DEVELOPMENTS

Alaska

FOREIGN FISHING ACTIVITIES OFF ALASKA:

U.S.S.R.: The Soviet trawl fleet off Yakutat increased steadily during February 1965, from about 15 to more than 100 vessels. The rapid build-up of Soviet fishing activities along the Yakutat coast can probably be attributed to curtailment of fishing activities in the Bering Sea because of heavy ice-pack conditions, and insufficient catches for vessels to attain pledged quotas.



Fig. 1 - Soviet (BMRT) stern trawler offshore of Kodiak, Alaska, in May 1964.

Soviet vessels were observed in mid-February trawling for flounder and sole in outer Bristol Bay northeast of Port Moller. The number of vessels operating in that fishery was believed reduced somewhat by the end of the month.



Fig. 2 - Soviet refrigerated fish transport in Gulf of Alaska, June 1964.

By the end of the month it appeared that the Soviet herring fishery in the Bering Sea, which involved over 100 vessels in the early part of February, had been completely abandoned and the fleet redeployed for species other than herring.

Japan: The Japanese factoryship Chichi-bu Maru, accompanied by some 12 trawlers, continued to fish for shrimp on the grounds north of the Pribilof Islands during February. It was believed the Japanese had four large stern trawlers fishing in the eastern Bering Sea. Those vessels were reported as the Aso Maru, Akebono Maru's No. 71 and 72, and the Taiyo Maru No. 82; all operating in the vicinity of Unimak Island. No Japanese vessels were seen in the Gulf of Alaska during the month.

TWO NEW KODIAK KING CRAB PLANTS IN OPERATION:

The two new king crab plants at Kodiak were operating full time in February and helped relieve the supply situation to some extent, but many of the fishermen were still having trouble finding ready buyers for their crabs. Some vessels were laid up for as long as two weeks at the dock with full loads of king crab unable to find a buyer. Mortality was high on crabs held in vessel tanks. Fishermen on the south end of Kodiak Island run as far as Seldovia to make delivery. The increased processing facilities for about 9,000 crabs a day developed just in time to see meat recovery fall off as the crabs began to "go light," particularly from the south-end fishery. Many fishermen planned on quitting in another 2 or 3 weeks.

SHRIMP-PROCESSING OPERATIONS AT KODIAK INCREASE:

A shrimp-processing firm in Kodiak started several months ago a second 10-hour shift



Fig. 1 - Shrimp being transported from landing dock to processing plant.



Fig. 2 - Pink shrimp being machine-peeled in an Alaska processing plant.

working in the plant it leased. In addition, arrangements were made to lease and use the four shrimp peelers installed on the upper floor of another plant. The machines in February were expected to be operating by the last half of March.

JAPANESE FIRM INTERESTED IN ALASKA HERRING PRODUCTS:

A prominent Japanese fishery firm completed negotiations in February 1964 with an Alaska firm to buy 1,200 tons of large frozen herring. The herring will be shipped to Japan where the roe will be removed and the fish processed for human consumption.

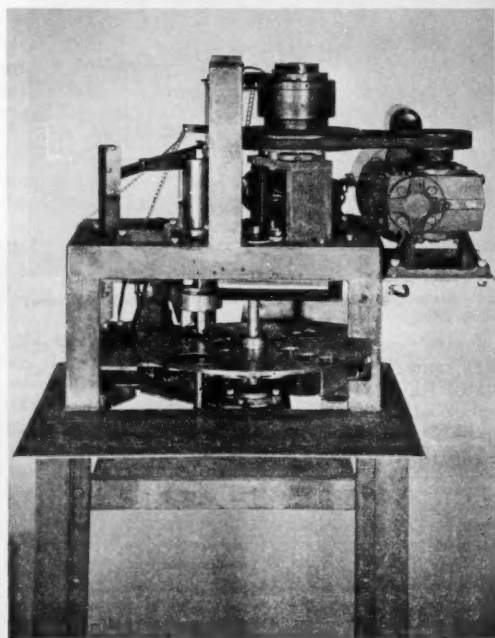
A Hawaiian company and a Japanese importing firm have also expressed interest in buying brined herring roe as a result of samples of that product extracted from herring caught in spring 1964 and frozen until the end of the year at Kodiak. A 12-percent recovery rate on herring roe from a random lot of fish frozen for bait in spring 1964 was reported by a Kodiak firm.



Blue Crabs

SEMI-AUTOMATIC CLEANER-DEBACKER MACHINE:

A semiautomatic machine that cleans and debacks whole cooked blue crabs has undergone successful in-plant trials, announced the U. S. Bureau of Commercial Fisheries Regional Office, Gloucester, Mass. The machine was designed and built by the American Scientific Corporation, Alexandria, Va., under a contract with the U. S. Bureau of Commercial Fisheries.



A semiautomatic machine that cleans and debacks whole cooked blue crabs.

When in operation, the machine, described as a semiautomatic cleaner-debacker for blue crabs, produces "heart-shaped" cores and exposes the lump and flake meat for ready removal. During the in-plant trials, the machine was operated by three commercial crab pickers who also picked the lump and flake meat from the machine cores. Studies comparing the yield from regular whole crabs versus the yield from the machine cores were conducted. The evaluation of data from the studies is still under way; however, the results will be available for area demonstrations.

Area demonstrations of the machine are being scheduled. Plans are that the demonstrations will take place in the Gulf, South Atlantic, and Chesapeake Bay areas. Notification of the dates, times, and locations of the demonstrations will be made later. The demonstrations are open to interested parties.

Further information about the cleaner-debacker machine can be obtained by writing to the U. S. Bureau of Commercial Fisheries Technological Laboratory, College Park, Md.



California

PELAGIC FISH POPULATION SURVEY CONTINUED:

M/V "Alaska" Cruise 64-A-9-Pelagic Fish (November 27-December 15, 1964): The objectives of this cruise by the California Department of Fish and Game research vessel Alaska in the coastal waters of central California from Point Reyes to Point Conception were to: (1) survey the fish and invertebrates of the inshore pelagic environment; (2) assess the distribution, abundance, density, age and size composition, and recruitment of pelagic fish populations; and (3) collect live specimens for blood-genetic studies by the U. S. Bureau of Commercial Fisheries Biological Laboratory, La Jolla, Calif.

Midwater trawl and nightlight blanketnet stations were the principal survey methods used. Large numbers of jellyfish and salps in areas north of San Simeon prevented trawling and as a result a complete survey was not possible there. Nightlight blanketnet stations were occupied extensively in that more northern area, but these are generally less

productive than midwater trawl stations and are not directly comparable with them. Very stormy weather prevented any coverage between San Simeon and Morro Bay.

A total of 39 light and 3 trawl stations were occupied north of San Simeon (the trawl net was badly torn at one station when it became overloaded with jellyfish). Ten light and 13 trawl stations were completed south of Morro Bay. A total of 235 miles was scouted while running between stations at night.

NORTHERN ANCHOVIES: As on all cruises conducted in 1964, anchovies (*Engraulis mordax*) were the principal species taken. They were caught in 12 of 13 midwater trawl tows south of Morro Bay and 2 of 3 tows to the north. In contrast, they were caught at only 1 of 10 light stations south of Morro Bay and at only 4 of 39 to the north.

Midwater trawl catches were generally small, with only 2 of them exceeding 500 fish. But one of the them yielded 16,500 fish weighing about 1,000 pounds.

Two of the 5 light-station catches were made between Point Sur and Cape San Martin, in an area where anchovies have seldom been seen or taken previously. A sample of those fish, and another from near Santa Cruz, were brought back alive for blood-genetic studies by the U. S. Bureau of Commercial Fisheries Biological Laboratory at La Jolla.

A sizable proportion of the anchovies caught were large fish. In several catches they ranged from about 135 to 155 millimeters (5.3 to 6.1 inches), and 15 of the 19 anchovy catches contained some fish over 140 millimeters (5.5 inches) long.

Only one anchovy school was identified during night scouting, and very few dense traces were seen on the precision depth-recorder; 20 unidentified schools were seen.

JACK MACKEREL: Four jack mackerel (*Trachurus symmetricus*) were caught at 3 stations. Two were juveniles measuring 57 and 101 millimeters (2.2 to 4.0 inches) and the others were subadults.

SARDINES AND PACIFIC MACKEREL: No sardines or Pacific mackerel were caught or observed on this cruise.

OTHER ACTIVITIES: A new instrument for determining the depth at which the net is fishing was used during this cruise. The instrument (a Furuno Net-Sonde) has a wireless system to transmit fishing depths from the net to the wheelhouse and provides a constant check on net depth while a tow is in progress. This instrument will play a vital role in sampling fish schools that are located with the Precision Depth Recorder.

Weather and sea conditions during the cruise were about as good as could be expected for that area and time of year. Two periods of unusually good weather allowed a more thorough light station coverage than had generally been possible. Sea surface temperatures ranged from 11.1° C. (52.0° F.) near Avila to 14.0° C. (57.2° F.) off Point Arguello. Surface temperatures averaged 12.3° C. (54.1° F.) north of San Simeon and 11.6° C. (52.9° F.) south of Morro Bay.

Note: See *Commercial Fisheries Review*, April 1965 p. 14.



Cans--Shipments for Fishery Products



January 1965: A total of 178,568 base boxes of steel and aluminum was consumed to make cans shipped to fish and shellfish canning plants in January 1965 as compared

with 187,044 base boxes used during January 1964.

1964: A total of 2,752,126 base boxes of steel and aluminum was consumed to make cans shipped to fish and shellfish canning plants in January-December 1964, a decrease of 4 percent from the 2,874,534 base boxes used during 1963. The decline was due partially to a drop in the canning of Maine sardines and shrimp.

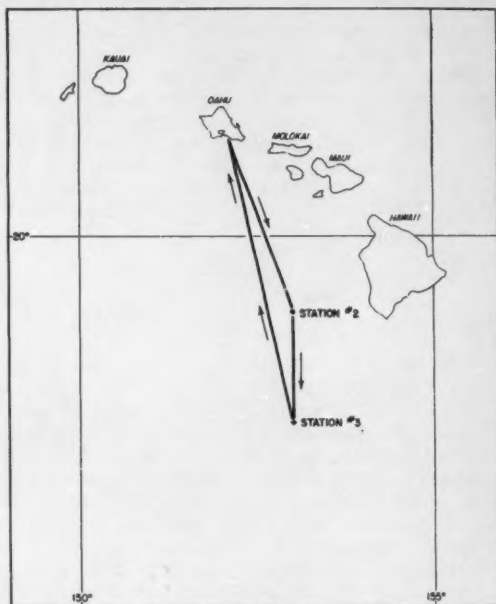
Note: Statistics cover all commercial and captive plants known to be producing metal cans. A "base box" is an area 31,360 square inches, equivalent to 112 sheets 14" x 20" size. Tonnage figures for steel (timplat) cans are derived by use of the factor 23.7 base boxes per short ton of steel. (In the year 1964 tonnage data were based on the factor 23.5 base boxes per short ton of steel; and in the years 1962 and 1963 tonnage data were based on the factor 21.8 base boxes per short ton of steel.) The use of aluminum cans for packing fishery products is small.



Central Pacific Fisheries Investigations

EXPENDABLE BATHYTHERMOGRAPH EQUIPMENT TESTED:

M/V "Charles H. Gilbert" Cruise 78--Phase I (January 4-7, 1965) and Phase II (January 8-23): The objectives of this cruise by the research vessel Charles H. Gilbert, operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Honolulu, Hawaii, were to: (1) test expendable bathythermograph (XBT) equipment from the vessel, (2) fish for live scombrids (mackerels), and (3) study currents in the Kaiwi Channel. The tests were made in collaboration with Stanford University and the manufacturers of the equipment.



Shows area of operations during Phase I of M/V Charles H. Gilbert Cruise 78 (January 4-7, 1965).

The area of operations during Phase I was between 19° N. and 17°30' N. along 157° W. where the Charles H. Gilbert made XBT tests in conjunction with the Bureau's oceanographic research vessel Townsend Cromwell (Cruise 12--January 5-24). While the Cromwell was making a hydrograph cast at station No. 2, the Charles H. Gilbert, at the same time, made 5 XBT drops at half speed and 11 drops at full speed within a 53-minute period at a distance of about 197 feet from the Townsend Cromwell. En route to Townsend Cromwell

station No. 3, six successful XBT drops were made concurrently with mechanical BT casts. During the Townsend Cromwell's oceanographic cast at station No. 3, four successful half-speed XBT drops and 10 successful full-speed drops were made in the time of 62 minutes within 531 feet of the vessel.

Operations during Phase II of the cruise were within 25 miles of Oahu. On 2 of the 6 days spent in fishing, 19 skipjack tuna, 5 yellowfin, 4 little tuna, and 1 frigate mackerel were caught. None was taken on the other 4 days. Two yellowfin tuna, suitable for density determinations, were caught by trolling. Five skipjack tuna snouts and 6 tongues were collected and preserved for histological study.

For an experimental study of currents in the Kaiwi Channel, a series of 21 optical targets (polyurethane sheets and paper) were released at 1-mile intervals between Laau Point, Molokai, and Koko Head, Oahu. The vessel then took a position in mid-channel while an aerial photographic survey from 10,000 feet was made of the target release area.

Note: See Commercial Fisheries Review, Feb. 1965 p. 16.

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TRADE WIND ZONE

OCEANOGRAPHIC STUDIES CONTINUED:

M/V "Townsend Cromwell" Cruise 13 (February 2-4 and 8-27, 1965): Measurements using the Hytech salinity-temperature depth (STD) *in situ* recorder for testing and calibration purposes were made by the research vessel Townsend Cromwell during two 1-day cruises, on February 2 and 4, 1965, at stations off Waianae, Oahu. The research vessel is operated by the Biological Laboratory, U. S. Bureau of Commercial Fisheries, Honolulu, Hawaii.

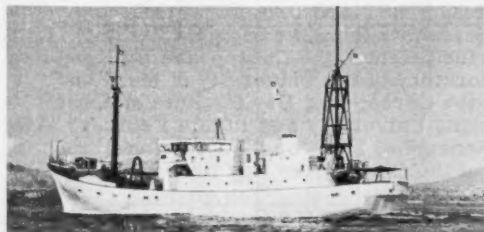


Fig. 1 - The research vessel Townsend Cromwell.

On February 8 the Townsend Cromwell started the 12th cruise in a series of oceanographic cruises to collect data on rates of change in the distribution of properties in the trade wind zone of the North Pacific. The area of operations during that phase of the cruise was in the central North Pacific bounded by latitudes 10° N., 27° N., and longitudes 148° W., 158° W., where 43 oceanographic stations were occupied along the cruise track. At each station temperatures and samples for salinity analysis were obtained at 20 depths to 1,500 meters (4,921 feet). In addition, deep casts to 5,000 meters (16,404 feet) were taken at stations 21 and 25, and a cast to 4,000 meters (13,123 feet) was taken at station 40.

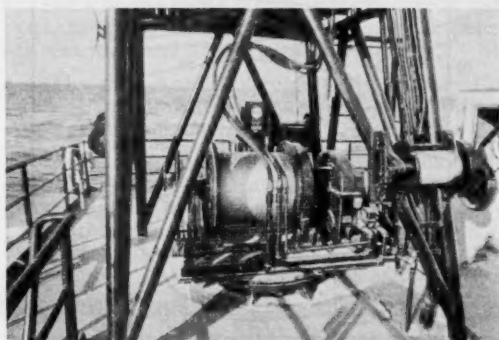
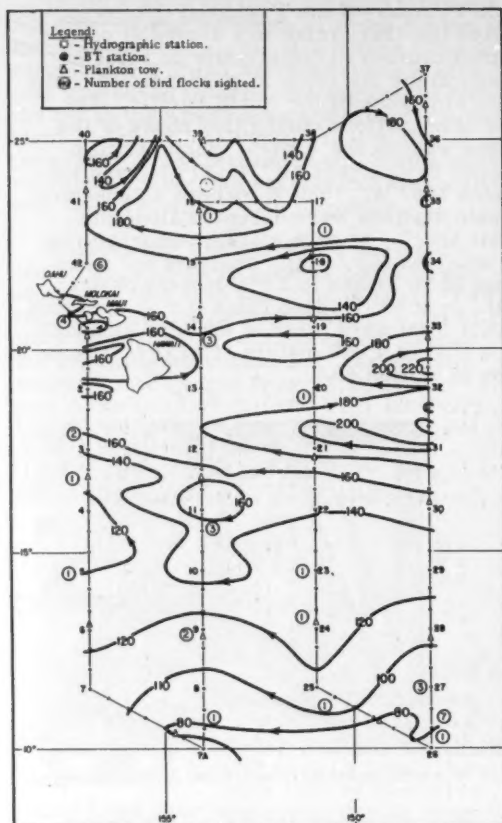


Fig. 2 - Part of the deck of the research vessel Townsend Cromwell.

Surface temperatures during the cruise showed that cooling continued to occur in the study area. This was most noticeable north of latitude 20° N. where it appeared that tongues of cool water were intruding from the northeast and northwest. The surface temperatures ranged from 21° C. (69.8° F.) in the northern sections to 25.5° C. (77.9° F.) in the southern sections. This compares with a similar range of 21.5° C. to 25.5° C. (70.7° F. to 77.9° F.) encountered during February 1964.

The February 1965 circulation pattern was similar to the previous month in January in that a more regular flow regime exists south of 18° N. while more complex patterns are seen north of that latitude. The February pattern differed mainly in that the southwesterly flow in the southern areas showed a more pronounced westerly component. The north-south gradient of isotherm depths were similar to the previous month's in all sections except the westernmost where a definite de-



Track chart of the research vessel Townsend Cromwell Cruise 13 (February 8-27, 1965), showing depth contours of the 20°C isotherm in meters.

crease was seen, indicating a slackened flow. To the north, the cyclonic eddy within the island area seen during January, weakened greatly in February. However, a similar cyclonic eddy was seen north-east of the islands. In general this past February's flow pattern was different from last year's in that the westerly flow increased in intensity while the eddy systems decreased.

A total of 41 bird flocks were sighted during this cruise as compared with 30 during the vessel's previous cruise. Eight of the bird flocks were seen immediately north of station 26, where equatorial water of 34.0 ‰ was detected and a 1° rise in surface temperature to 25.8° C. occurred within 30 miles.

Other operations during the cruise included taking the usual series of bathythermograms, surface bucket temperatures, water samples for salinity analyses, release of drift bottles, and other oceanographic data collection.

The research vessel Townsend Cromwell was scheduled to leave her home base at Honolulu on March 8, 1965, for an oceanographic research cruise covering an area of over 600,000 square miles in the vicinity of the Hawaiian Islands. The 4,400-mile voyage is the 14th cruise of the 158-foot long vessel, commissioned in Honolulu in January 1964. Especially constructed for the Bureau's Honolulu Laboratory, she is one of the nation's largest and most modern oceanographic research vessels.

Except for one cruise, the Townsend Cromwell has been used exclusively for a study of Trade-Wind Zone Oceanography. One of the requirements of that study is monthly oceanographic and weather data from each of 42 locations in the Hawaiian Islands area. Each of those cruises takes 19 days.

The monthly trade-wind zone oceanographic cruises are scheduled to end in June 1965, when 16 months of data will have been collected. The Townsend Cromwell will then be used for other studies in connection with tuna and oceanography. These series of cruises are preliminary to a two-year, four-vessel operation planned for the future. The results will be of importance in the solution of many fishery and oceanographic problems.

Note: See Commercial Fisheries Review, April 1965 p. 19.

Chesapeake Bay

CHESAPEAKE BAY RESEARCH COUNCIL HOLDS FIRST ANNUAL MEETING:

Scientists from the Virginia Institute of Marine Science, the Chesapeake Biological Laboratory of the University of Maryland, and the Chesapeake Bay Institute of Johns Hopkins University met in late February 1965 at Annapolis, Md., for the first annual meeting of the Chesapeake Bay Research Council.

The purpose of the Council is to provide a framework for planning and carrying out co-operative research projects, and an effective means for exchanging information regarding

research projects under way in each member laboratory. Pressing demands for information needed to regulate the marine resources of Chesapeake Bay and the coastal waters of Maryland and Virginia have brought about rapid growth of the marine research agencies in the Chesapeake area.

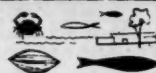
Members of the Council are standardizing field and data treatment techniques in order to more easily interchange information. Compatible systems of data recording and processing will allow reports from one group to be transferred directly to the recording system of another group without having first to revise the data.

At the February meeting, scientists from the Chesapeake Bay Institute reported their hydrographic and nutritional studies in the upper Bay. Scientists from the Chesapeake Bay Laboratory outlined their Patuxent River thermal pollution study. The Virginia Institute of Marine Science delegates described results of hydrographic and ecological work conducted on the James River, and also discussed work being done for the U. S. Army Corps of Engineer to establish possible effects of spoil on bottom populations.

The new Council will meet annually and may hold interim meetings when necessary.

(Virginia Institute of Marine Science, Gloucester Point, March 10, 1965.)

Note: See Commercial Fisheries Review, Sept. 1964 p. 17.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-FEBRUARY 1965:

Fresh and Frozen: Purchases of fresh and frozen fishery products in January 1965 for the use of the Armed Forces were up 16 percent in quantity and 10 percent in value from the previous month. The increase was due mainly to larger purchases of shrimp, flounder filets, and ocean perch filets. Compared with the same month in the previous year, purchases in January 1965 were up 12 percent in quantity and 35 percent in value.

The increase in purchases in January 1965 was about offset by moderately lower purchases in February 1965 for most items.

Total purchases in January-February 1965 were up 20 percent in value from those in the same period of 1964, but the total quantity of the purchases was about the same in both periods.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, January-February 1965 with Comparisons

| QUANTITY | | | | | | VALUE | | | | | |
|--------------|-------|----------|-------|-----------|-------|-----------|-------|----------|-------|-----------|-------|
| January | | February | | Jan.-Feb. | | January | | February | | Jan.-Feb. | |
| 1965 | 1964 | 1965 | 1964 | 1965 | 1964 | 1965 | 1964 | 1965 | 1964 | 1965 | 1964 |
| (1,000 Lbs.) | | | | | | (\$1,000) | | | | | |
| 2,370 | 2,108 | 2,036 | 2,300 | 4,406 | 4,408 | 1,465 | 1,088 | 1,311 | 1,231 | 2,776 | 2,319 |

Table 2 - Purchases of Principal Fresh and Frozen Fishery Products by Defense Subsistence Supply Centers, January-February 1965 with Comparisons

| Product | January | | | | February | | | | Jan.-Feb. | |
|-------------------------------|--------------------|--------------------------|--------------------|--------------------------|--------------------|--------------------------|--------------------|--------------------------|--------------------|--------------------|
| | 1965 | | 1964 | | 1965 | | 1964 | | 1965 | 1964 |
| | Quantity Pounds | Avg. Cost Cents/Pound | Quantity Pounds | Avg. Cost Cents/Pound | Quantity Pounds | Avg. Cost Cents/Pound | Quantity Pounds | Avg. Cost Cents/Pound | Quantity Pounds | Quantity Pounds |
| Shrimp: | | | | | | | | | | |
| raw headless | 89,700 | 97 | 83,500 | 80 | 94,700 | 97 | 99,400 | 79 | 184,400 | 182,900 |
| peeled and deveined | 103,080 | 137 | 73,850 | 109 | 51,080 | 135 | 110,900 | 109 | 154,160 | 184,750 |
| breaded | 361,400 | 89 | 284,800 | 66 | 242,020 | 89 | 345,500 | 63 | 603,420 | 630,300 |
| molded and breaded | 76,100 | 64 | 4,000 | 59 | 19,150 | 72 | 3,700 | 59 | 95,250 | 7,700 |
| Total shrimp | 630,280 | 95 | 446,150 | 76 | 406,950 | 96 | 559,500 | 75 | 1,037,230 | 1,005,650 |
| Scallops | 165,400 | 83 | 172,750 | 60 | 156,180 | 84 | 218,350 | 65 | 321,580 | 391,100 |
| Oysters: | | | | | | | | | | |
| Eastern | 39,476 | 107 | 1/ | 1/ | 99,296 | 100 | 1/ | 1/ | 138,772 | 1/ |
| Pacific | 38,244 | 79 | 1/ | 1/ | 23,982 | 80 | 1/ | 1/ | 62,226 | 1/ |
| Total oysters | 77,720 | 93 | 130,154 | 93 | 123,278 | 96 | 127,364 | 91 | 200,998 | 257,518 |
| Filets: | | | | | | | | | | |
| Cod | 31,900 | 34 | 33,196 | 36 | 82,850 | 36 | 71,350 | 38 | 114,750 | 104,546 |
| Flounder | 388,450 | 32 | 529,744 | 29 | 236,000 | 37 | 328,072 | 33 | 624,450 | 857,816 |
| Ocean perch | 369,290 | 33 | 276,000 | 31 | 325,500 | 36 | 386,600 | 32 | 694,790 | 662,600 |
| Haddock | 126,100 | 39 | 130,594 | 40 | 145,900 | 38 | 221,000 | 39 | 272,000 | 351,594 |
| Haddock portions | 208,500 | 50 | 8,000 | 37 | 101,050 | 48 | 650 | 38 | 309,550 | 8,650 |
| Steaks: | | | | | | | | | | |
| Halibut | 102,900 | 48 | 106,525 | 37 | 105,750 | 49 | 88,000 | 37 | 208,650 | 194,525 |
| Salmon | 5,000 | 72 | 13,157 | 65 | 9,490 | 65 | 10,410 | 66 | 14,490 | 23,567 |
| Swordfish | 540 | 59 | 800 | 51 | 320 | 61 | 1,900 | 48 | 860 | 2,700 |

1/Breakdown not available.

Table 3 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, January-February 1965 with Comparisons

| Product | QUANTITY | | | | | | VALUE | | | | | |
|--------------------|--------------|------|----------|------|-----------|------|-----------|------|----------|------|-----------|------|
| | January | | February | | Jan.-Feb. | | January | | February | | Jan.-Feb. | |
| | 1965 | 1964 | 1965 | 1964 | 1965 | 1964 | 1965 | 1964 | 1965 | 1964 | 1965 | 1964 |
| | (1,000 Lbs.) | | | | | | (\$1,000) | | | | | |
| Tuna | 641 | 650 | - | - | 641 | 928 | 291 | 285 | - | 123 | 291 | 408 |
| Salmon | 1 | 679 | 5 | - | 6 | 679 | 1 | 416 | 4 | - | 5 | 416 |
| Sardines | 31 | 20 | 80 | 40 | 111 | 60 | 20 | 8 | 49 | 14 | 69 | 22 |

Average prices in 1965 were up for all the leading items, except cod fillets and haddock fillets. Prices were much higher for shrimp and scallops in 1965.

Haddock portions were purchased in much larger quantity in January-February 1965, but the increase was offset by lower purchases of flounder fillets, haddock fillets, oysters, and scallops.

Freeze-Dried: Purchases for the Armed Forces in January 1965 included 1,024 pounds of freeze-dried shrimp valued at \$12.59 a pound.

Canned: Tuna and sardines were the main canned fish items purchased for the Armed Forces in January-February 1965.

Notes: (1) Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than shown because data on local purchases are not obtainable.

(2) See Commercial Fisheries Review, Mar. 1965 p. 29.

VETERANS ADMINISTRATION REQUIREMENTS DURING 1965:

Following are the estimated requirements of the Veterans Administration for fishery products to be procured in 1965:

| Item | Case Size | Quantity |
|--|-------------|-------------|
| Canned: | | |
| Salmon: | | Case |
| Medium red or coho, with skin and backbone | 48/1-lb. | 1,200 |
| Pink | 48/1-lb. | 2,000 |
| Red or sockeye | 48/1-lb. | 3,100 |
| Coho, dietetic | 48/1½-lb. | 2,200 |
| Sardines, veg. oil, Grade A (22 to 32 per can) | 48/15-oz. | 1,200 |
| Tuna: | | |
| Lt. meat, chunk style, packed in veg. oil | 12/64-oz. | 5,900 |
| Lt. meat, solid pack, lge. pieces, dietetic | 48/1½-lb. | 2,300 |
| Shrimp, freeze-dried (peeled, headless, precooked): | | |
| Large | 6/No. 10's | 400 |
| Pieces | 6/No. 10's | 600 |
| Frozen: | Size | Lbs. |
| Cod fillets, skinless | 4-5-oz. | 28,188 |
| Flounder (sole) fill., skinless | 4-5-oz. | 59,088 |

(Table continued next column.)

| Frozen (contd.): | Size | Lbs. |
|---|-------------------------|--------|
| Haddock fillets, skinless | 4-5-oz. | 52,740 |
| Halibut steaks, 7/8-inch thick (+ or - 1/8 inch) | 4-5-oz. | 33,612 |
| Salmon (red, king or silver) steaks, 7/8-inch thick (+ or - 1/8 inch) | 4-5-oz. | 8,952 |
| Ocean perch fillets, skin on | 8-12 fill. per lb. | 93,684 |
| Sea scallops, med. size | 3-1 1/4 in. in diameter | 21,792 |

Note: Requests for bids will be announced as they are issued. For additional information, contact the Marketing Division for Subsistence, Veterans Administration Supply Depot, P. O. Box 27, Hines, Ill. 60141.



Fish Spotting

BALLOONS TESTED FOR SPOTTING FISH SCHOOLS:

The use of balloons for spotting fish schools may turn out to be more effective than using other aircraft. Earlier this year the U. S. Bureau of Commercial Fisheries contracted with professional balloonists in testing the feasibility of using balloons to help spot schooling fish--tuna in this case--off the Pacific Coast, announced the Department of the Interior, March 6, 1965.

Instead of perching atop a 60-foot mast or "crow's nest," the tuna vessel lookout would scan a much larger area from a small gondola suspended from an inflated bag filled with hot air. According to navigational charts, the horizon is a little more than 10 statute miles from a man 60 feet above the surface. At 500 feet the horizon is nearly 30 miles away.

The balloon-testing experiments were conducted January 30-February 4, 1965, by the Bureau's Tuna Resources Laboratory, La Jolla, Calif., in cooperation with the Bureau's Oceanographic Instrumentation Office, Washington, D. C. The testing area was from 2 to 4 miles off La Jolla from a 110-foot converted wartime subchaser, the Yaqui Queen,

chartered by the Bureau and used as an albacore tuna troller.

The equipment used during the tests consisted of a spherical dacron balloon, 50 feet in diameter, with a tubular aluminum frame gondola capable of holding two persons. A ducted fan driven by a one-quarter horsepower electric motor mounted at the base of the balloon was used for inflation and maintenance of an internal pressure of about 2 pounds per square foot. The air was heated by a propane burner mounted in the base of the balloon and supplied by a hose to a deck-mounted pressurized propane tank. Extra pressure was supplied to the propane tank by a 50-pound CO₂ cylinder to force the liquified propane to a height of 500 feet. A hydraulic winch was used to handle the $\frac{5}{8}$ -inch nylon tethering line.

During the testing period, 4 inflations took place, with 6 ascensions of the balloon--4 manned and 2 unmanned. The balloon was flown in a variety of weather and sea conditions, ranging from dead calm to winds of 12 knots with moderate seas. During calm weather, 5 ascents were made to a maximum height of 500 feet. Total air time was about 8 hours. The four scientists cooperating in the project made ascensions and all were impressed with the exceptional stability of the balloon and by its vertical maneuverability. This was accomplished by burner adjustments made either at the gondola or the propane tank on the vessel. It was possible to make controlled "touch and go" landings on the water.

The experiments showed that all phases of the operations of a tethered hot-air balloon are capable of being safely performed from a vessel at sea, and are practical under a wide range of working conditions.

Two professional balloonists trained biologists from the Bureau's La Jolla Tuna Resources Laboratory in techniques of inflation, soaring, and recovery. The instructors say that sitting at 500 feet in a tethered balloon is safer than driving in modern traffic. The worst that could happen, they said, is that the hot air inside the big bag would cool and the balloon would descend slowly to the sea. The gondola is equipped to float and observers have life jackets. In normal operation the balloon is brought down by a cable attached to the winch on the vessel's deck.

A number of tuna vessels on the West Coast carried helicopters for use in spotting fish

schools during the past few years, but they have not been satisfactory. According to experienced vessel owners, the biggest problem has been the difficulty of maintaining the "choppers" at sea. Other vessels have tried small seaplanes, but they also have been mostly eliminated because recovering them in rough weather proved to be hazardous and difficult. Many tuna vessels on the West Coast now hire free-lance pilots, but small planes do not have the range for working far at sea.

According to a fishery biologist of the La Jolla Fishery-Oceanography Center, the next step in the balloon project is to design a balloon with aerodynamic qualities which can be towed by a tuna vessel without hindering its speed. Other fishery experts are looking forward to an even more sophisticated approach to sighting tuna. They are working on plans to equip the aerial platforms with television equipment completely controlled from the towing vessel.



Fish Sticks and Portions

U. S. PRODUCTION, OCTOBER-DECEMBER 1964:

United States production of fish sticks and fish portions amounted to 50.8 million pounds during the fourth quarter of 1964, according to preliminary data. Compared with the same quarter of 1963, this was an increase of 4.7 million pounds or 10.2 percent. Fish portions (30.8 million pounds) were up 5.4 million pounds or 21.0 percent, and fish sticks (19.9 million pounds) were down 658,000 pounds or 3.2 percent.

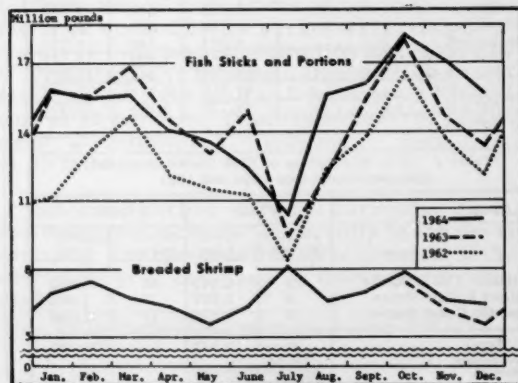


Fig. 1 - U.S. production, 1962-64.

Cooked fish sticks (18.7 million pounds) made up 93.5 percent of the October-December 1964 fish stick total. There were 30.1 million pounds of breaded fish portions produced, of which 24.5 million pounds were raw. Unbreaded fish portions amounted to 748,000 pounds.

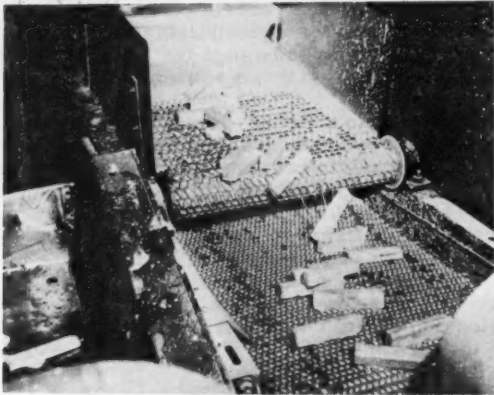


Fig. 2 - Fish sticks (pieces of frozen fish fillets frozen in blocks) passing through batter prior to being coated with breading in a New England frozen fishery products plant.

The Atlantic States remained the principal area in the production of both fish sticks and fish portions, with 16.3 and 18.6 million pounds, respectively. The Inland and Gulf States ranked second with 1.8 million pounds of fish sticks, and 11.6 million pounds of fish portions.

Table 1 - U.S. Production of Fish Sticks by Months and Type, October-December 1964 1/

| Month | Cooked | Raw | Total |
|------------------------------|----------------------|-------|--------|
| | ... (1,000 Lbs.) ... | | |
| October | 6,682 | 344 | 7,026 |
| November | 5,750 | 397 | 6,147 |
| December | 6,221 | 549 | 6,770 |
| Total 4th Qtr. 1964 1/ | 18,653 | 1,290 | 19,943 |
| Total 4th Qtr. 1963 | 18,755 | 1,846 | 20,601 |
| Total 1964 1/ | 67,810 | 5,722 | 73,532 |
| Total 1963 | 74,137 | 5,165 | 79,302 |

1/ Preliminary.

Table 2 - U.S. Production of Fish Sticks by Areas, October-December 1964 and 1963

| Area | 1/1964 | | 2/1963 | |
|-----------------------|--------------|------------|--------------|------------|
| | No. of Firms | 1,000 Lbs. | No. of Firms | 1,000 Lbs. |
| Atlantic Coast States | 23 | 16,347 | 22 | 16,843 |
| Inland & Gulf States | 6 | 1,817 | 7 | 1,976 |
| Pacific Coast States | 11 | 1,779 | 12 | 1,782 |
| Total | 40 | 19,943 | 41 | 20,601 |

1/ Preliminary.

2/ Revised.

Table 3 - U.S. Production of Fish Portions by Months and Type, October-December 1964 1/

| Month | Cooked | Breaded Raw | Total | Unbreaded | Total |
|------------------------------|----------------------|-------------|---------|-----------|---------|
| | ... (1,000 Lbs.) ... | | | | |
| October | 2,033 | 8,739 | 10,772 | 293 | 11,065 |
| November | 1,742 | 8,921 | 10,663 | 201 | 10,864 |
| December | 1,810 | 6,818 | 8,628 | 254 | 8,882 |
| Total 4th Qtr. 1964 1/ | 5,585 | 24,478 | 30,063 | 748 | 30,811 |
| Total 4th Qtr. 1963 | 4,571 | 20,064 | 24,635 | 826 | 25,461 |
| Total 1964 1/ | 20,898 | 82,134 | 103,032 | 2,541 | 105,573 |
| Total 1963 | 16,623 | 74,967 | 91,590 | 3,054 | 94,644 |

1/ Preliminary.

Table 4 - U.S. Production of Fish Portions by Areas, October-December 1964 and 1963

| Area | 1/1964 | | 2/1963 | |
|---------------------------|--------------|------------|--------------|------------|
| | No. of Firms | 1,000 Lbs. | No. of Firms | 1,000 Lbs. |
| Atlantic Coast States ... | 24 | 18,575 | 24 | 14,337 |
| Inland & Gulf States ... | 8 | 11,586 | 10 | 10,310 |
| Pacific Coast States ... | 10 | 560 | 10 | 814 |
| Total | 42 | 30,811 | 44 | 25,461 |

1/ Preliminary.

2/ Revised.



Great Lakes

1965 LAKE TROUT RESTOCKING PROGRAM IN LAKE MICHIGAN:

Upper Lake Michigan will be planted with 1.3 million yearling lake trout during summer 1965, probably in June, under the lake trout restoration program of the Great Lakes Fishery Commission.

With hatchery production exceeding Lake Superior's fish needs and sea lamprey control work moving ahead on schedule in Lake Michigan streams, the decision to plant the yearlings was made this March by the Lake Trout Rehabilitation Committee of the Great Lakes Fishery Commission at a meeting held in Milwaukee, Wis. The committee, representing U. S. state and Federal, and Canadian agencies in the Great Lakes area, made its decision after noting that chemical treatment should bring the sea lampreys under control in northern Lake Michigan by 1967.

Providing the planted fish with the needed leeway of safety until 1967 is the fact that lake trout are not usually attacked by sea lampreys until they are about 15 inches long. Thus, the 4- to 5-inch long fish scheduled for stocking this summer will not be in danger of predation before the Lake's sea lamprey popu-

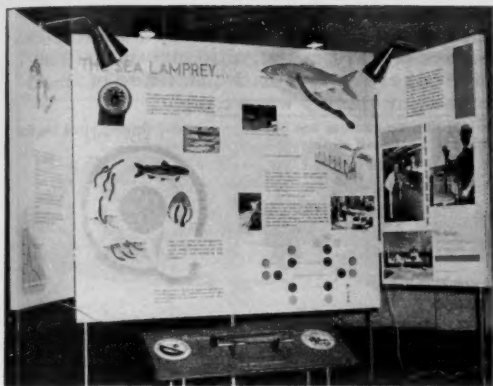


Exhibit showing sea lamprey research and control studies conducted for the Great Lakes Fishery Commission.

lations are substantially reduced two years from now.

Lake Michigan's planting stock will come from the Federal Jordan River Valley hatchery in northern Michigan. Plans call for releasing one million of the young fish at three separate locations between Seul Choix Point and Epoufette. Other releases will include 100,000 small lake trout in Grand Traverse Bay and 200,000 fish off Door Peninsula in Wisconsin waters. Those planting sites were singled out for the first round of stocking because they offer lake trout their best chances of survival.

Chemical control of sea lampreys is making its earliest gains in those areas, which historically have been good ones for supporting lake trout populations. Also of advantage is the fact that there is less small-mesh gill-netting in those areas than in some other parts of Lake Michigan.

All of the planted lake trout will be marked so that their growth, survival, natural reproduction, and movements can be checked by biologists. Releases of the fish will be made in deep-water areas and carefully timed with calm weather to prevent them from being swept ashore. Personnel of the Michigan Conservation Department will plant fish in reef and offshore areas from Seul Choix Point to Epoufette. (*News Bulletin*, Michigan Department of Conservation, Lansing, March 18, 1965.)



Gulf Fisheries Explorations and Gear Development

SHRIMP GEAR STUDIES CONTINUED:

M/V "George M. Bowers" Cruise 57: To evaluate by comparative trawling, the ES-6 (A) electric trawl was the objective of this cruise in the Gulf of Mexico by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel George M. Bowers. The cruise ended on March 8, 1965, with the vessel's return to Panama City.

Trawling tests during the cruise were conducted in depths of 20 to 30 fathoms on soft mud bottom east of Pass a Loutre, Miss. Methods used were similar to those of previous cruises--both nets were fished simultaneously, with identical scope ratio. To check both day and night fishing results, a minimum of 4 drags for each period were scheduled. Turbidity was checked by using a closed circuit TV camera with distance markers secured in front of the camera. The camera was lowered to various depths and the visible markers were counted on the TV monitor aboard the vessel. Winter storms persisted during most of the cruise and restricted operations.

Shrimp catches were light and ranged from 9 pounds to 6.5 pounds per hour during night drags with the nonelectric net. A total of 19 drags was completed, 11 of which yielded useful information. Results obtained from those 11 drags were: Day electric average 118 percent of the night nonelectric average; night electric average 83 percent of night nonelectric average; and day nonelectric average 110 percent of night nonelectric average.

Some typical indications of the turbidity in the area worked by the vessel were: Depth of water--5 fathoms: 2" definition at 4 fathoms; 0" definition at 5 fathoms. Depth of water--22 fathoms: 6" definition at 6 fathoms; 1" definition at 22 fathoms. Depth of water--30 fathoms: 2" definition at 8 fathoms; 1" definition at 30 fathoms.

Since the shrimp were not burrowing during the daylight hours, due apparently to the severe turbidity, the comparative effectiveness of the electrical gear could not be thoroughly evaluated.

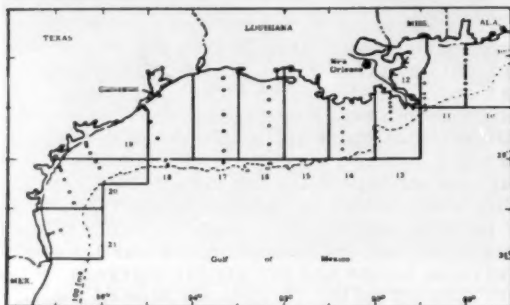
Note: See *Commercial Fisheries Review*, February 1965 p. 25.



Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Gus III" Cruise GUS-26 (January 14-February 28, 1965): A 15-day shrimp-staining experiment designed to study shrimp mortality and growth comprised a portion of this cruise by the chartered research vessel Gus III. The cruise was another of a series in a continuing Gulf of Mexico shrimp distribution study conducted by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Galveston, Tex.



Station pattern for shrimp distribution studies by M/V Gus III, Cruise GUS-26.

The shrimp-staining experiment took place on the Tortugas fishing grounds near Key West, Fla., between eastern and western Gulf shrimp sampling areas. A total of 11,549 pink shrimp was stained and released within that area.

Regular trawling operations related to the shrimp distribution study were carried out in 7 statistical areas which yielded fair catches of white shrimp and only relatively small catches of brown shrimp. A total of 23 standard 3-hour tows with a 45-foot flat trawl was made in conjunction with both east and west trawling operations of the cruise. There were 52 plankton tows made during the cruise, and 36 bathythermograph (BT) and 102 water (Nansen bottle) casts. In crossing the southeastern part of the Gulf en route to Key West, 264 drift bottles were released and 22 (270-meter or 886-foot) BT casts were made.

Most of the areas worked yielded varying amounts of white shrimp. The largest white shrimp catches were 33 pounds (21-25 count) from the 10-20 fathom depth in area 13, and 26 pounds (51-67 count) in area 20.

The best brown shrimp catch of the cruise was 36 pounds (31-40 count) from 10-20 fathoms in area 18. Catches of brown shrimp in other areas were not significant--mostly in area 20 where very small quantities of small and medium shrimp were caught.

Note: (1) Shrimp catches are heads-on weight; shrimp sizes are the number of heads-off shrimp per pound.

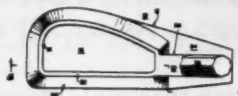
(2) See *Commercial Fisheries Review*, April 1965 p. 21.



Inventions

PATENTED LOW-COST MANUAL DEVICE FOR MOLDING FOOD PRODUCTS:

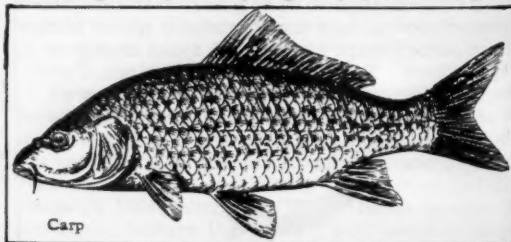
A patent was recently granted on a device for molding food products (including seafood) into patties of various shapes. The device is actually a simple mold (made of metal, wood, or plastic) which is operated by hand on a flat surface. The inventor emphasizes the novel designs that can be turned out at low cost with the device. (U. S. Patent No. 3,153,810 issued Jett E. Adams, 2318-B Jason Drive, Kirtland Air Force Base, New Mexico.)



Iowa

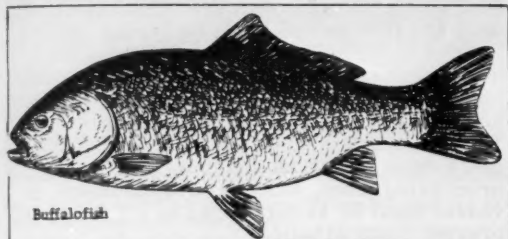
ROUGH FISH REMOVAL PROGRAM, 1964:

More than 900,000 pounds of rough fish were removed from Iowa waters in 1964 by Iowa State Conservation Commission rough fish removal crews and chemical control projects. The 13 fisheries stations in Iowa reported the removal of 588,900 pounds of carp; 175,800 pounds of buffalofish; 90,300 pounds of shad; and 47,000 pounds of other species, including sheepshead, dogfish, quillback, gar,



Carp

and suckers. About 160,000 pounds of carp, buffalofish, and sheepshead were sold on contract through the Spirit Lake Station. The remainder were either destroyed or carried away by the public.



Buffalofish

The largest chemical control project conducted by the Iowa State Conservation Commission in 1964 was the renovation work on Lake Odessa in Louisa County. Over 500,000 pounds of rough fish were removed from that lake. (Iowa State Conservation Commission, February 8, 1965.)



Law of the Sea

INSTITUTE ESTABLISHED BY UNIVERSITY OF RHODE ISLAND:

The Law of the Sea Institute has been established by the University of Rhode Island to promote understanding and solution of the legal and international problems that can arise from attempts to exploit the ocean's resources, it was announced March 5, 1965.

"In many cases we appear to have at least the basic scientific and technological knowledge needed to mine the sea floors, undertake shellfish farming, or other projects, yet commercial interests are often discouraged because of the lack of clear-cut laws which would give them some protection for the heavy investments required," the Dean of the University of Rhode Island Graduate School of Oceanography said. "By means of this Institute we hope to bring together information on the law of the sea, provide for the exchange of ideas and information, assist in the education of students and the public, and publish papers and symposia proceedings," he explained.

In addition, the Institute is planning to conduct an annual week-long summer conference on the law of the sea to which scientific and legal experts would be invited, along with

students and others interested in the topic. The Institute, which is believed to be the first of its kind in the nation, will also sponsor a series of prominent speakers throughout the academic year.

One of the scientists who helped establish The Law of the Sea Institute said, "The Institute would bring together individuals and groups of diverse interests and points of view and thus provide new insights into law of the sea problems. By making information available to professionals and nonprofessionals in this country and abroad the Institute could contribute to the peaceful solution to some of the pressing problems of national rights in the oceans and seas of the world."

For instance, one of the most tangled questions is how far from shore do a nation's territorial boundaries extend. The United States claims 3 miles, while other countries maintain they control out to 6, 12, or even 200 miles. There are also unsettled questions of how you measure these boundaries, particularly where coastal or large groups of islands are involved. Quarrels have also broken out between nations over "historic fishing rights," which have evolved over many years.

Interest in territorial limits and mining rights has been heightened by rapid scientific advances and new engineering skills which may soon open up vast undersea mineral resources.

Today, in the words of one scientist, the "sea is getting smaller" and all these topics require continuing research and analysis "in the light of both changing technology and resource use and of changing national and international interests." (University of Rhode Island, March 5, 1965.)



Massachusetts

STATE LEGISLATURE PASSES RESOLUTION ON IMPORTS OF SOVIET COD BLOCKS:

In March 1965, the Massachusetts Legislature passed the following House resolution concerning United States imports of Soviet frozen cod blocks:

Whereas, The importation of Russian-caught codfish is a matter of deep concern to

Gloucester and to other New England fishing ports where an already high rate of unemployment exists; and

Whereas, The New England fishing industry is at a great disadvantage in competing with the Russian fishing fleet which is a completely subsidized government operation; and

Whereas, The Federal Bureau of Commercial Fisheries and the State Department have been asked to investigate the imports of Soviet cod blocks; therefore be it

Resolved, That the Massachusetts House of Representatives respectfully urges the Governor to instruct the Director of the Division of Marine Fisheries and the Commissioner of Commerce and Development to investigate the importing of Russian-caught codfish; and be it further

Resolved, That said director and said commissioner be further requested to cooperate fully with any Federal agency engaged in any similar investigation; and be it further

Resolved, That a copy of these resolutions be sent forthwith by the Secretary of the Commonwealth to His Excellency the Governor and to the Director of the Division of Marine Fisheries and the Commissioner of Commerce and Development.

MORE SANITARY METHODS FOR HANDLING FISH:

The use of forks for transferring fish from one receptacle to another, or from fishing vessel holds into unloading receptacles, will be prohibited in Massachusetts effective January 1, 1966. The announcement was made by the Division of Food and Drugs, Department of Health, Commonwealth of Massachusetts, in a letter dated March 16, 1965, to members of the fishing industry.

It was pointed out that forking has a detrimental effect on quality and that discontinuance of that method of handling fish is in the interest of the quality improvement program of fish received and marketed in Massachusetts.

The announcement urged the fishing industry to participate in the State's quality improvement program by cooperating with the Massachusetts Food and Drug Division, and

asked that the Division be kept informed on the progress made in developing a substitute method for handling and transferring fish whenever such transfer is required.

The Division also ordered that effective May 1, 1965, no fish shall be placed in containers or boxes which have not been previously cleaned and sterilized, and that all containers of fish in transit shall be covered and kept under proper refrigeration. The Massachusetts industry was advised that all containers of fish located outside of a fish processing plant, storage establishment, or vessel must be kept covered at all times to prevent contamination.



North Atlantic

FOREIGN FISHING ACTIVITIES OFF COAST, MARCH 1965:

Soviet fishing vessel activity in the North Atlantic during March 1965 was double that of the previous month. A total of 84 vessels were sighted and identified as 49 fish-factory stern trawlers, 19 refrigerated side trawlers, 13 refrigerated and processing fish transports, 1 fuel and water carrier, and 2 salvage tugs. This compared with 42 vessels observed in February and with only 3 vessels seen on Georges Bank at the same time a year earlier, although 15 Soviet factory stern trawlers and several fish transports were operating along the mid-Atlantic Coast areas during that period.



Fig. 1 - Soviet factory stern trawler (Tropik class) alongside fish transport vessel in North Atlantic.

Soviet fishing operations generally ranged from 70 miles south of Montauk Point, Long Island, eastward along the 100-fathom curve of the Continental Shelf 30 to 40 miles south and southeast of the Nantucket Lightship. Their activity was also confined to Nantucket Shoals adjacent to the lightship.



Fig. 2 - Refrigerated fish carrier *Neva* (Pervomank class) of 3,100 gross tons operating in North Atlantic.

Each of the vessels sighted was actively engaged in fishing operations and had large quantities of red hake and whiting on deck. Stern trawlers were seen hauling their trawls which were estimated to have between 30,000 and 40,000 pounds of fish. Dehydration plants were continually working, which would indicate that the excess portion of their catch was being used for fish meal. The apparent success in fishing for those species was demonstrated by the continuous increase of their fishing vessels and support ships.

During the month, the Soviet salvage tug *Slavnyy* towed the factory stern trawler *Ametist* into shelter of Cape Cod Bay in order to make repairs to the fishing vessel's propeller. The vessels were visited by the Bureau's Fisheries Management agents. The Soviet vessels had been vigorously exploiting the red hake fishery for several months prior to March. Although their operations had been observed during the weekly surveillance flights, there was some speculation concerning the quantity and use of their catch. While aboard the vessel, the Bureau officers learned that this particular stern trawler had been engaged in fishing operations for about one week. Their fish cargo was estimated to be more than one million pounds of predominantly red hake with smaller amounts of whiting. That would indicate a catch of more than 100,000 pounds of fish a day. It was learned that their catch per tow was about 30,000 pounds.

Both the red hake and whiting caught are processed and used for human consumption. The red hake are packed and frozen whole in cartons of about 40 pounds each. The whiting, however, are headed and gutted before freezing. Fish waste and catches in excess of their processing facilities are used for fish meal. The gear used is heavy, bottom-tending trawls with fine mesh in the cod end and extensions.

Only red hake and whiting were being caught during March, and the vessel crew indicated there was no interest in other species--at least not until the herring season starts on Georges Bank. Some lobsters were being caught for consumption aboard the vessel.



Fig. 3 - Deck view of Soviet trawler fishing early this year in North Atlantic (40° W. between 69° and 70° W.). Fish catch consists mostly of red hake and whiting (silver hake).

In order to observe foreign fishing activities in the North Atlantic, the staff of the Fisheries Resource Management Office, U.S. Bureau of Commercial Fisheries, Gloucester, Mass., has been conducting weekly reconnaissance flights cooperatively with the U. S. Coast Guard.

Note: See *Commercial Fisheries Review*, April 1965 p. 25.



North Atlantic Fisheries Investigations

LATE WINTER DISTRIBUTION AND ABUNDANCE OF HERRING LARVAE STUDIED:

M/V "Phalarope" Research Cruise (March 9-12, 1965): To determine the late winter distribution and abundance of herring larvae was the purpose of this cruise by the chartered research vessel *Phalarope*, operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Boothbay Harbor, Me. The area of operations was in the Sheepscot and Damariscotta estuaries and the Boothbay region off the coast of Maine.

BIOLOGICAL OBSERVATIONS: A total of 18 Boothbay Depressor trawl tows were made during this cruise at selected stations in the prescribed area. Except for one 15-minute bottom tow, all tows were oblique and lasted for one-half hour. In addition, at a single station off Tumbler Island, Boothbay Harbor,

an oblique 30-meter (98-foot) tow from 20 meters (66 feet) to the surface was made with a high speed Gulf III sampler, and Clarke-Bumpus closing nets were towed simultaneously at four levels--0, 6, 12, and 18 meters (or 20, 39, and 59 feet).

PRELIMINARY FINDINGS: Of the 683 herring larvae taken during the cruise, 414 were taken in one 15-minute bottom tow off Tumbler Island. The largest catches of herring larvae were made from the northern tip of Squirrel Island to Boothbay Harbor, and indicated a fairly heavy concentration of herring larvae.

Swarming barnacle larvae were the dominant zooplankters and constituted 97 percent of the zooplankton collected. Other zooplankters present were chaetognaths, the copepod *Calanus finmarchicus*, decapods, and harpacticoid copepods. Stomachs of 10 herring larvae ranging from 29 to 42 millimeters (1.1 to 1.7 inches) were examined for food content. Only one showed any evidence of intensive feeding on barnacle larvae. The remaining nine stomachs were fully compacted with small cyclopoid copepods.

Barnacle larvae began swarming in the Boothbay region during the first week in March 1963 and dominated the zooplankton until the third week of April. Surface water temperature during that period ranged from 37.5° F. to 43.0° F. The first large-scale barnacle swarming in 1964 occurred during the second week of March and continued to the second week of April. Surface water temperatures during the period ranged from 34.7° F. to 37.1° F. This year (1965), swarming first occurred in the Boothbay area during the second week of March. Surface water temperature was 37.5° F., suggesting that early spring surface temperatures of 34.7° F. influence the onset of barnacle swarming. Barnacle larvae were found throughout the water column. The greatest concentration was at 12 meters (39.4 feet), with decreasing numbers at 6 meters (19.7 feet) and the surface. Moderate numbers were found at the lower level of sampling at 18 meters (59 feet). With the colder temperatures found east of the Penobscot, past records indicate that swarming occurs later in that area than in the western region of the coast.

Note: See Commercial Fisheries Review, February 1965 p. 35.

LARVAL HERRING DISTRIBUTION IN GULF OF MAINE STUDIED:

M/V "Rorqual" Cruise 1-65 (January 30-February 7, 1965): To determine the distribution of larval herring along the coast of the Gulf of Maine was the objective of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Rorqual. The area of operations was the coastal area between Cape Ann and Machias Bay within the 50-fathom line.

Herring larvae ranging in standard length from 20 to 42 millimeters (0.8 to 1.7 inches) occurred at 20 of the 21 stations covered on this cruise. The catch-per-tow ranged from 0 to 22 with the Gulf III and from 0 to 269 with the Boothbay Depressor No. 2 trawl. The total catch was 887 fish, with the largest catches in the western Gulf. No concentrations of fish were detected on the echo-sounder.

BIOLOGICAL OBSERVATIONS: Oblique hauls with the Boothbay Trawl 2 were made at 21 stations (from 20 meters or 66 feet to the surface at 15 stations, and from the bottom to surface at 6 stations). Oblique Gulf III tows were made from 20 meters to the surface at 12 coastal continuity stations.

HYDROGRAPHIC OBSERVATIONS: At each of the 12 continuity stations Nansen bottle casts, bathythermograph casts, photometer readings, and Secchi disc readings were made; 5 sea bed drifters and 5 surface drift bottles were also released.

Note: See Commercial Fisheries Review, February 1965 p. 35.

EFFECTS OF TOW SPEED AND DISTANCE TRAWLED ON SIZE AND VARIABILITY OF CATCHES:

M/V "Albatross IV" Cruise 65-1--Part 1 (January 12-19, 1965) and Part 2 (January 19-25): To determine the effects of duration of tow, speed, and distance trawled on the size and variability of catches was the objective of this cruise in the southeast part of Georges Bank by the U. S. Bureau of Commercial Fisheries research vessel Albatross IV. The cruise was in two parts because the vessel was forced to return to its base at Woods Hole, Mass., on January 16 to avoid a storm, and resumed the cruise on the 19th.

A total of 64 tows was completed during the cruise consisting of a series of 16 tows

each that lasted 15, 30, 60, and 120 minutes. At each station worked, the catch (or aliquot sample) of each fish species was weighed and measured. Quantitative samples of invertebrates were also obtained and 47 bathythermograph (BT) casts were taken while steaming, and taken about every 6 hours while on station. Stations were occupied according to a 3-stage sample design in order to obtain (along with duration of tow data) more information on efficiency of size of sampling unit currently used on survey cruises.

An odometer was attached to the foot rope of the trawl and number of turns recorded after each tow. At the first station a buoy with radar reflectors was anchored. Precise estimates of speed and distance trawled were obtained for 8 tows at station No. 1 by recording radar ranges and bearings of the buoy during each tow. Rough seas during the remainder of the cruise prevented further use of the buoy.

Blood samples were collected for further absorption studies on haddock blood, and yellowtail blood smears were taken for the School of Medicine of the University of Virginia. A visiting scientist from the Massachusetts Institute of Technology collected intestines from haddock and cod on Part I of the cruise. Those samples were to be analyzed for the bacillus, *Clostridium botulinum*, in the botulism investigation conducted by the Department of Food Science at M. I. T. The study is under a contract from the U. S. Bureau of Commercial Fisheries.



North Pacific Fisheries Explorations and Gear Development

HAKE POPULATION SURVEY CONTINUED:

M/V "John N. Cobb" Cruise 70 (February 1-March 12, 1965): Six weeks of hake explorations along the Pacific Coast were completed March 12, 1965, by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb. Purpose was to determine the late winter distribution and abundance of that species along the Pacific Coast and selected areas of Puget Sound.

Principal objective of the cruise was to locate and capture Pacific hake (*Merluccius productus*) off southern California during

their spawning period (as determined previously by hake egg and larvae surveys conducted by the Bureau's research vessel Black Douglas).

Secondary objectives were to: (1) make echo-sounding surveys to determine if hake are present in more northern areas along the coasts of Washington, Oregon, and northern California during late winter months; and (2) collect biological and oceanographic data.

ECHO SOUNDING TRANSECTS: Alternate offshore and inshore echo-sounding transects were made during transit to and from southern California and Mexico. Distances offshore ranged from 1 to 50 miles encompassing water depths from 20 to 1,300 fathoms. No significant signs of hake were noted except in the southern California area. Occasional traces of small dense schools of fish, believed to be anchovy, were seen at points along the entire coast at depths ranging from surface to 125 fathoms. The southern limit of operations was near Geronimo Island, Mexico, about 250 miles south of San Diego, Calif.

With the exception of one echo-sounding transect from south of San Diego, Calif., to Geronimo Island, Mexico, all fishing effort in southern California was conducted in areas adjacent to stations at which the Black Douglas had reported an abundance of hake eggs and larvae. Most drags were made on one school of hake near a California Cooperative Fisheries Investigations (CALCOFI) station located about 35 miles west of San Diego. Relocation of the school each morning by echo-sounding search patterns tended to show a north-northwest movement of the main body of hake at about 5 miles per day. (On one occasion the Black Douglas returned to the center of a spawning school of hake as defined by the John N. Cobb's echo-sounding pattern and collected abnormally large quantities of hake eggs. Some plankton net tows reported by the Black Douglas produced over 5 cubic centimeters of hake eggs.)

PELAGIC TRAWLING: A total of 31 drags was made using the "Cobb" pelagic trawl in the following areas: Puget Sound 2, Washington coast 1, Oregon coast 5, and southern California 23.

With the exception of two hake taken in one tow near Stonewall Bank off central Oregon and a small amount taken in Puget Sound,

Wash., catches of hake were made only in the southern California area. Thirteen of the drags off southern California produced catches of hake ranging from a few pounds to 20,000 pounds per 1-hour tow. Ten other drags off southern California produced only small amounts of squid, jellyfish, myctophids, pelagic shrimp, and anchovy.

In comparison with echo-soundings and catch rates of nonspawning hake made in prior years off Washington and Oregon, the echo-soundings near CALCOFI station would be classed as excellent and should have produced larger hake catches than were taken. Most large catches were made either in early morning before 9:00 or in late afternoon after 3:00, which suggests that fish may be able to avoid the net during mid-day periods.

Usual depth of the spawning school of hake was about 125 fathoms at surface-to-bottom depths of 500 to 800 fathoms. When hake were taken, catches consisted entirely of that species.

Two drags were made during the hours of darkness in the vicinity of spawning schools of hake. One of the tows (made at 115 fathoms) produced 200 pounds of hake while the other tow (made at a depth of 22 fathoms) produced only Euphausiids and jellyfish. Echo-soundings of schools of spawning hake in late evening and night hours failed to show a vertical migration towards the surface at approach of darkness as has been commonly observed on schools of nonspawning hake in more northerly waters.

Hake taken during drags through spawning schools usually ranged in length from 35 to 58 centimeters (13.8 to 22.8 inches) and consisted of from 80 to 97 percent males. One drag made on fish signs adjacent to the spawning school near the CALCOFI station and at a depth of 200 fathoms produced hake up to 63 centimeters (24.8 inches) in length and a higher percentage of females.

Severe gilling problems were encountered whenever large catches were made. That suggests that a smaller mesh size (less than 3 inches) should be used when fishing spawning schools of hake off southern California.

All female hake taken during the survey, including two fish taken in central Oregon, were either ripe, partially spent, or spent.

Stomach contents of fish were examined from each catch and were found empty.

GEAR USED: The principal gear used during the explorations was a Mark II "Cobb" pelagic trawl constructed of 3-inch webbing. A full-length cod end liner of $\frac{1}{2}$ -inch mesh was used during some drags to retain small specimens, but was removed during drags on schools of spawning hake off southern California. The "Cobb" pelagic trawl was rigged with two aluminum hydrofoil-type otter boards on 60-fathom bridles. Fishing depth of the net was determined with a dual electrical depth-telemetry system having a depth-sensing unit mounted at each otter board.

Other gear used during the explorations included: (1) a 1-meter plankton net, (2) a gravity-type bottom-core sampler, and (3) a reversing thermometer.

OTHER OBSERVATIONS: Twenty plankton tows with a 1-meter net were taken during the first 3 weeks of the cruise to determine if hake eggs and/or larvae were present. Tows lasted from 20 to 30 minutes and were made from near-surface waters to depths of 250 meters. Bottom depths over which the tows were made ranged from 30 to 1,000 fathoms and covered the area from Puget Sound, Wash., to San Diego, Calif.

Samples of bottom sediments were taken from the Columbia River to San Diego, Calif., with a gravity coring device for botulism studies being conducted by the Bureau's Seattle Technology Laboratory. A total of 21 samples was taken at predetermined stations at depths varying from 40 to 1,070 fathoms.

With the exception of a few days in the early part of the cruise, weather conditions were excellent. Wind velocities were mostly under 20 knots with many days ranging from calm to light airs.

M/V "John N. Cobb" Cruise 71: To continue the hake survey and other midwater trawl studies, the John N. Cobb was scheduled to depart Seattle, March 29, 1965, for 8 weeks of exploratory pelagic fishing from British Columbia to southern Oregon.

Waters to be investigated were Puget Sound, and the coastal area off Vancouver Island (British Columbia), Washington, and Oregon.

Major emphasis of Cruise 71 was to be on obtaining information relative to when and where hake (*Merluccius productus*) schools first appear off Washington, Oregon, and Vancouver Island in the spring. Secondary objectives will be to: (1) obtain additional data relative to catching efficiency of the "Cobb" pelagic trawl; and (2) obtain biological data on Pacific hake, such as degree of maturity, presence or absence of hake larvae and/or eggs in the surface waters, size, age and sex composition, and schooling behavior.

Note: See *Commercial Fisheries Review*, April 1965 p. 29, Feb. 1965 p. 36.



Oceanography

PRIVATE FIRM PLANS TO OPEN FISHING GEAR DEVELOPMENT BASE IN FLORIDA AND "SEA LAB" IN MARYLAND:

Fishing Gear Base in Florida: Plans to open a fishing gear development base in Sarasota, Fla., were announced in February 1965 by a large corporation (Westinghouse Electric Corp.).

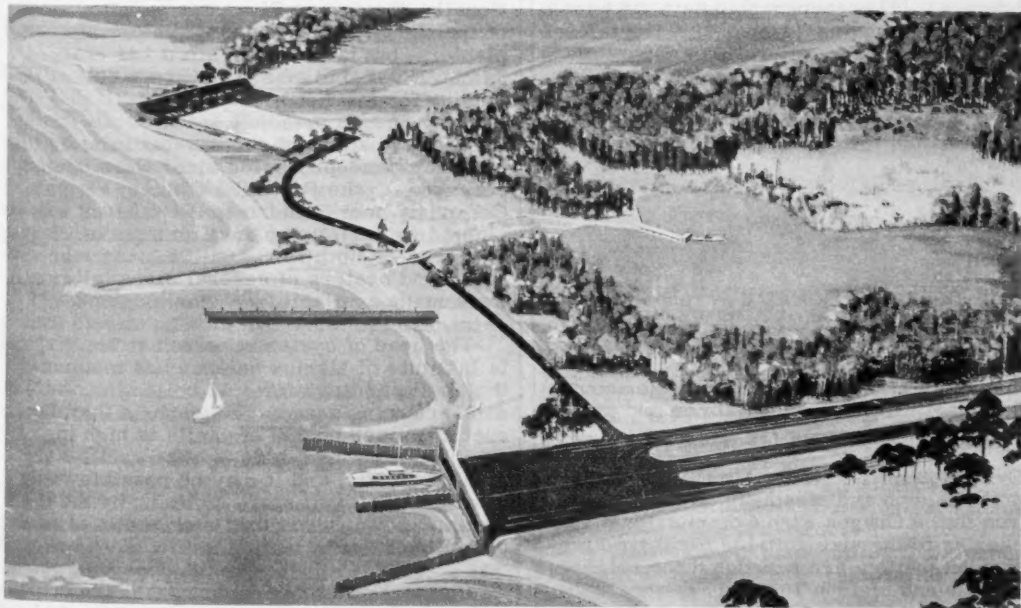
An official of the firm said the new department is the first serious effort by a major de-

fense and space company to apply its technological skills to better equipping the U. S. commercial fishing fleet.

"Sea Lab" in Maryland: The same corporation announced plans on March 2, 1965, to build a multimillion dollar ocean engineering and research facility on the western shore of Chesapeake Bay near Annapolis, Md. The firm's representative said the 2-story structure on Chesapeake Bay would have 120,000 square feet of space and would house offices and laboratories for the company's overseas division.

The 115-acre site near the Chesapeake Bay Bridge will include a 30-acre lake and facilities for docking vessels up to 300 feet long. About 350 persons, including more than 200 scientists and engineers, will be employed at the plant, designed to accommodate a working force of 500. The lake will be dredged to a depth of 25 to 90 feet and used for testing underwater devices.

Work at the new "sea lab" will involve underwater weapons systems, mines, oceanography, underwater acoustic methods, and missile handling and launching procedures.



Artist's drawing of the "sea lab" complex to be built by a private firm on a 115-acre site near Annapolis, Md.

* * * * *

ANNUAL OCEAN SCIENCE AND OCEAN ENGINEERING CONFERENCE TO BE HELD:

The 1965 "Ocean Science and Ocean Engineering Conference and Exhibit" will be held at the new Washington Hilton Hotel, Washington, D. C., June 14-17, 1965. The conference is sponsored by The Marine Technology Society and The American Society of Limnology and Oceanography.

Some 80 papers will be given by scientists and engineers from universities, oceanographic institutions, private industries, and government agencies, announced the chairman of the Conference Program Committee. In making the announcement the chairman said, "The papers submitted indicate the breadth and depth of interest of our scientific and technical communities in the marine environment and in man's role of exploring and exploiting it for knowledge and resources. We believe the papers, together with the special symposia that will be offered, assure that the conference will serve to define and evaluate major new developments and future programs concerning the world ocean."

The papers to be presented fall under eight main headings: (1) measurement techniques and devices; (2) oceanographic data systems; (3) ocean engineering; (4) undersea vehicles; (5) marine resource exploration and exploitation; (6) general marine science; (7) results of U. S. Biological Program of Indian Ocean Expedition; and (8) distribution of Columbia River Water in the North Pacific.



Oregon

LARGE-SCALE HATCHERY SALMON PLANTINGS UNDER WAY:

The release of 330,000 yearling silver (coho) salmon in the Nehalem River system during early March 1965 heralded the annual spring planting of hatchery salmon and steelhead in Oregon rivers.

Over 40.8 million (over 1 million pounds) juvenile salmon and steelhead of all species, reared in the Oregon Fish Commission's 15 hatcheries to the size suitable for their downstream migration, are scheduled for release before the end of June 1965. They should supply returning runs of adult fish 2, 3, 4, and even 5 years from now. Hatchery rearing of juvenile salmon to the age they would

reach in nature before starting their seaward journey greatly reduces early mortality. In fact, Oregon salmon hatcheries report successful rearing to young fish of 85 percent of eggs collected. That is better than the natural survival rate.

This season an additional 3.7 million yearling salmon and steelhead were released prematurely from Oregon hatcheries as a result of the Christmas and late January floods. Another 24.4 million newly hatched salmon fingerlings were also to be released prematurely this spring from the surplus of eggs that were taken last fall as "insurance." Those fingerlings are now in excess of the rearing capacity of the Oregon Fish Commission hatcheries. (Oregon Fish Commission, March 12, 1965.)



Oysters

NEW SEED AREAS OPENED IN VIRGINIA:

The opening on March 8, 1965, of new seed oyster areas in the Piankatank and Great Wicomico Rivers marks a new era in the history of the Virginia oyster industry. Traditionally, the James River has supplied most of the seed oysters for Virginia private planters, but failure of spatfall has changed James River into an area of clean culling or tonging for marketable oysters.

About 70 acres of seed oyster grounds in each new seed-producing river were opened, according to the Repletion Officer, Virginia Commission of Fisheries. Each river was planted with shells by the Commission of Fisheries in both 1963 and 1964. As a result, seed oysters of several sizes (all small) were made available.

The head of oyster research at the Virginia Institute of Marine Science has monitored the shell plantings for spat collection after each spawning season. He reports that the spat count per bushel of shells is high in samples examined, although the shells were planted thickly, and it may be possible to dig into shells without spat. Policing by the Commission insures that such shells are culled back.

Planters and tongers, however, are faced with new decisions about where to tong and what to buy. According to the director of the

Virginia Institute of Marine Science, MSX is present in a large portion of the Piankatank seed area, although the Great Wicomico has been found almost free of MSX. He urges oystermen using the Piankatank seed to plant in very low salinity waters (such as Morattico and above in the Rappahannock River), or be prepared for serious losses of oysters by next summer. He added that Great Wicomico seed should be suitable for planting wherever oysters have thrived in recent years.

Research work done by the Institute indicates that the dry summers of 1963 and 1964 have permitted MSX to penetrate farther up the tributaries of Chesapeake Bay than ever before. Since the disease is permitted to spread by higher salinities, only a normally wet spring would enable oysters in moderate salinity areas to cast out MSX, the scientists said. They also report that rainfall experienced thus far has been inadequate to offset the encroachment of higher salinities throughout the Bay system because of drought conditions in 1963 and 1964. The scientists added that MSX does not affect the edibility of oysters although such oysters are seldom fat.



Potomac River Fisheries Commission

REGULATIONS FOR SOFT-SHELL CLAMS AND OTHER SPECIES:

Regulations of the Potomac River Fisheries Commission on the taking of soft shell clams in the Potomac River became effective February 16, 1965. (The Virginia Legislature and the Maryland General Assembly have passed laws giving the Commission authority over commercial clamming in the Potomac.)

The Potomac soft-shell clam regulations govern clamming with hydraulic or mechanical dredges and establish:

(1) A daily limit of 40 bushels of soft-shell clams for each licensed dredge or rig.

(2) A license fee of \$25.

(3) Prohibitions on clamming within 100 yards of "commercially productive" oyster-tonging areas; within 50 feet of any fish net, wharf, pier, or bulkhead; within 1,000 feet of any public bathing beach during the period from May through September; within 100 yards of the average low-water shoreline; within

500 yards of any occupied duck blind; and on Sunday or between sunset and sunrise on any other day.

The Potomac soft-shell clam regulations also govern the licensing of individuals and dredges, size of dredges, minimum size of clams, transfer of dredges, authority of enforcement officers, and penalties.

Acting under the Potomac River Compact of 1958 (between Maryland and Virginia), the Potomac River Fisheries Commission had previously issued commercial regulations governing the licensing and taking of finfish, crab, and oysters from the Potomac.

Note: Copies of the Potomac fishery regulations are available from the Potomac River Fisheries Commission, P.O. Box 128, Colonial Beach, Virginia 22443.



Puerto Rico

JAPANESE FROZEN TUNA SHIPMENTS TO PUERTO RICO CANNERIES, 1964:

Japan shipped a total of nearly 50,000 short tons of frozen tuna (including loins) to four United States tuna canneries in Puerto Rico during 1964. Albacore (round) accounted for some 28,000 tons, followed by yellowfin with about 16,000 tons (mostly gilled and gutted), skipjack (round) 4,000 tons, and a small quantity of big-eyed tuna. The remainder of about 1,400 tons was made up of albacore and yellowfin tuna loins. (Suisan Tsushin, March 4, 1965.)

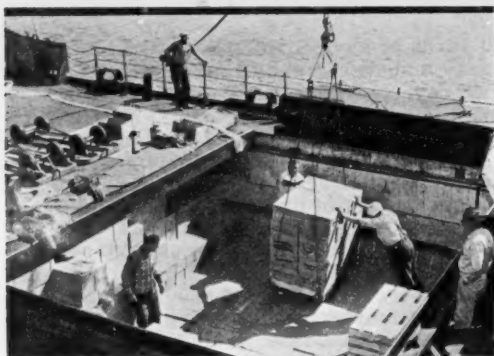


Salmon

U. S. PACIFIC COAST CANNED STOCKS, MARCH 1, 1965:

On March 1, 1965, canners' stocks in the United States of Pacific canned salmon totaled 1,966,187 standard cases (48 1-lb. cans), 511,774 cases less than on February 1, 1965, when stocks were 371,893 cases less than on January 1, 1965.

On the basis of a total of 2,342,254 actual cases (consisting of cans of $\frac{1}{4}$ -lb., $\frac{1}{2}$ -lb., 1-lb., etc.), pink salmon made up 51.3 percent (1,201,716 cases, mostly 1-lb. talls) of the total canners' stocks on February 1, 1965. Next came chum (536,529 cases, mostly 1-lb. talls), followed by red (411,505 cases). The remain-



A shipment of Alaska canned salmon being unloaded at a Port of Seattle Pier.

der of about 8.2 percent was coho (silver) and king salmon. A little more than 80 percent of the pink salmon stocks on hand was packed in 48 1-lb. cans, and the balance mostly in 48 $\frac{1}{2}$ -lb. cans.

| Table 1 - Total Cannery Stocks of Pacific Canned Salmon, March 1, 1965 | | | |
|--|--------------|--------------|--------------|
| Species | Mar. 1, 1965 | Feb. 1, 1965 | Jan. 1, 1965 |
| (No. of Actual Cases) | | | |
| King | 63,915 | 79,834 | 91,675 |
| Red | 411,505 | 511,299 | 607,913 |
| Coho | 128,589 | 146,865 | 176,504 |
| Pink | 1,201,716 | 1,550,541 | 1,795,619 |
| Chum | 536,529 | 648,041 | 726,063 |
| Total | 2,342,254 | 2,936,600 | 3,397,774 |

From February 1 to March 1, 1965, pink salmon stocks were lower by 348,825 actual cases (1-lb. talls lower by 273,519 cases), reds were down 99,794 cases, and chums were down 111,512 cases.

| Table 2 - Total Cannery Stocks on Hand March 1, 1965 (Sold and Unsold), By Species and Can Size | | | | | | |
|---|--------|---------|---------|-----------|---------|-----------|
| Case & Can Size | King | Red | Coho | Pink | Chum | Total |
| (Actual Cases) | | | | | | |
| 48 $\frac{1}{4}$ -lb. | 5,286 | 87,050 | 39,405 | 6,115 | 1,201 | 139,057 |
| 48 $\frac{1}{2}$ -lb. | 52,285 | 202,179 | 22,143 | 202,007 | 64,935 | 543,549 |
| 48 1-lb. | 6,242 | 122,139 | 62,170 | 977,515 | 455,507 | 1,623,573 |
| 12 4-lb. | 102 | 137 | 4,871 | 16,079 | 14,886 | 36,075 |
| Total | 63,915 | 411,505 | 128,589 | 1,201,716 | 536,529 | 2,342,254 |

| Table 3 - Cannery Shipments from July 1, 1964 to March 1, 1965, By Species and Can Size | | | | | | |
|---|---------|-----------|---------|-----------|---------|-----------|
| Case & Can Size | King | Red | Coho | Pink | Chum | Total |
| (Actual Cases) | | | | | | |
| 48 $\frac{1}{4}$ -lb. | 18,961 | 340,882 | 83,287 | 5,566 | 243 | 448,939 |
| 48 $\frac{1}{2}$ -lb. | 84,557 | 484,915 | 32,232 | 401,461 | 93,156 | 1,096,321 |
| 48 1-lb. | 15,879 | 375,915 | 106,339 | 1,420,409 | 423,100 | 2,341,642 |
| 12 4-lb. | 314 | 4,813 | 16,619 | 83,318 | 24,656 | 129,720 |
| Total | 119,711 | 1,206,525 | 238,477 | 1,910,754 | 541,155 | 4,016,622 |

Carryover stocks at the cannery level totaled 1,175,588 standard cases on July 1, 1964, the approximate opening date of the Pacific salmon packing season. Adding the new season pack of 3,922,356 standard cases brought the total available supply for the 1964/65 season to 5,097,944 standard cases.

Shipments at the cannery level from July 1, 1964, to March 1, 1965, totaled 4,016,622 actual cases (equal to 3,131,757 standard cases).

Data on canned salmon stocks are based on reports from U. S. Pacific Coast canners who packed over 98 percent of the 1964 salmon pack. (Division of Statistics and Economics, National Canners Association, March 27, 1965.)

NEW FISH SCREEN DEVICE MAY HELP GUIDE MIGRANT FISH:

A new device with the name of "Velocity-Matching Traveling Fish Screen" is being used to protect young salmon in critical river areas. The screen moves in a downstream direction as fast as the current and guides migrant fish into a collection area.

The idea was conceived by a biologist of the Fish-Passage Research Program, U. S. Bureau of Commercial Fisheries, Seattle, Wash., who visited Mount Hood to examine the tramway taking skiers up the mountain to see if a similar design could be used for moving or protecting fish.

The Velocity-Matching Traveling Fish Screen has been used experimentally at Troy, Oreg., Carson, Wash., and Tracy, Calif., and appears very promising for future use. Large-scale testing of the screen is planned for the Snake River, but first many complicated engineering problems have to be worked out. The choice of location and preliminary testing will begin with low-water levels during the summer or fall of 1965. Prototype testing is scheduled for 1966.

The greatest problem encountered has been diverting fingerling fall chinook salmon from tons of debris. They are the smallest and weakest swimmers because they have had the least time in the river. The fingerling fish have to be picked out at the time of spring floods and fast water velocities. The debris in the water ranges in size from houses dislodged by floods to log rafts and dead animals. Under such conditions it is exceedingly difficult to try and pick out tiny salmon and steelhead from the debris without injuring them. There are many problems to be resolved and these are now all in the probing stage. The scientific studies in connection with the project are being conducted by the Bureau's Fish-Passage Research Program at Seattle.

Many years of research have been devoted to the problem of protecting young salmon and steelhead from destruction in rivers, streams, and canals, subject to hydroelectric or irrigation developments. This has included studies on the practicability of using such guiding devices as electricity, light, odors, sound, traveling cables, air bubbles, and louvers. "None of these, however, has been able to cope successfully with the high flow and debris of a major river in flood without excessive cost," said the Bureau's supervisory biologist in charge of the project. "In an attempt to eliminate the need for expensive structures capable of withstanding high flow velocities, this method of guiding fish was conceived. The velocity-matching aspect of the system would actually permit the guiding of fish in stream velocities greater than the maximum swimming speed of the fish."

The task of safeguarding the various species of Pacific salmon as well as steelhead has not been simplified because each year the complex of dams and irrigation projects becomes even more intricate. Only time will tell whether the Velocity-Matching Traveling Fish Screen will be the answer to guiding salmon and steelhead fingerlings at dam sites.

The device on an experimental basis so far appears to be very promising.

USE OF PIPES TO MOVE SALMON TO SPAWNING GROUNDS STUDIED:

Getting salmon upstream through pipes in order to help them reach their spawning grounds is becoming a reality. The pipes can be made of ordinary metal or of plastic, and may conceivably be used for salmon on part of their journey home to the Columbia and Snake Rivers to spawn.

Scientists of the Fish-Passage Research Program, U. S. Bureau of Commercial Fisheries, Seattle, Wash., have been working on a so-called "Pipes for Fish" project as part of the problem of safely passing adult fish en route to the spawning gravel. Up to now, research on the use of pipes is said to show great promise. Large 40-pound salmon have been successfully passed through pipes only one foot wide. But to provide a margin of safety, scientists are using pipes 2 and 3 feet wide in their studies. Pipe-like, darkened fish-passage channels are already in use in Washington, Oregon, and California.

How will the pipes be used as an aid in passing fish? "Pipes are potentially useful as transportation channels for migrating adult salmonids," say biologists of the Fish-Passage Research Program of the Bureau's Seattle Biological Laboratory. "Fish passage through difficult areas at dams might be less costly if pipe passageways were substituted for conventional concrete structures. Another potential application includes the use of pipes to extend fishway exits beyond the immediate influence of spillway gates," it was explained.

Pipes are not being proposed as a substitute for fish ladders. No prototype research has been done in the use of pipes for the vertical ascent of salmon at dam sites. But they may prove very valuable in moving fish from one point to another. At a dam site, for example, there may be several collecting points and only one fish ladder. So the salmon may conceivably be transported from one side of the dam to the fishway on the other side by means of pipes. (A very substantial savings in funds would result if only one fish ladder needed to be built instead of two.)

Fishway exits may be extended further upstream by the use of pipes. Biologists have noted and have been concerned over the fact that when the fish ladder exit is close to the spillway of the dam, a number of salmon wash back over the spill and have to reascend the long ladder. By extending the exit a greater distance away from the spillway, this fall-back problem could be alleviated.

Short lengths of pipes have been used to pass fish under small roads and highways. But with the advent of superhighways, the greater lengths of pipes that will be required, and the possibility of darkened passageways, a number of questions have arisen. Because of such developments scientists are seeking to expand their knowledge on the use of pipes.

The Bureau's Fish-Passage Research Program at Seattle has received inquiries from highway departments from Alaska to Maine requesting information on methods to pass fish in pipes under highway systems. Under certain circumstances pipes may be used to replace large transportation channels, thus considerably reducing construction costs by thousands of dollars.

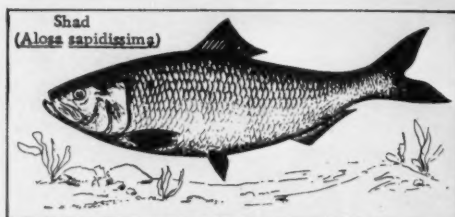
Research on the use of pipes in passing salmon and steelhead has been accomplished in a two-year study at the Fisheries-Engineering Research Laboratory located on the Washington shore of Bonneville Dam. Sections of pipes up to 270 feet long were used, two 180-degree turns were tried, and pipes of 1, 2, and 3 feet in diameter were tested. Various water velocities, light conditions, and entrance conditions were tested to establish the preferences of salmon and steelhead in traveling through pipes. Hydrosopes, used for visual observations, were placed at the entrances and exits of the pipes. Electronic detectors were used to record fish behavior and passage within the pipe.

Exploratory tests indicated that salmon passage was usually more rapid when the pipes were partially filled with water instead of completely filled. Salmon prefer it that way, scientific tests have shown. Salmon also were reluctant to enter such a small passageway as a 12-inch pipe, and stayed outside the entrance for long periods of time. To make the small entrances more enticing for the salmon, scientists developed funnel-type entrances that finally led the fish into the narrow pipe opening. Once they entered the pipe, they quickly swam through it.

Shad

SUSQUEHANNA SHAD RESTORATION STUDY ENCOURAGING:

It may be possible to restore the once great shad runs of the Susquehanna River. Shad have been barred from the Susquehanna for more than 50 years by dams and pollution. But now a study has shown that shad can spawn in the upper Susquehanna and successfully migrate to sea. The next objective of the study is to find out if adult shad will migrate upstream through the still waters behind dams.



The study on shad restoration in the Susquehanna was launched after the Pennsylvania Fish Commission in 1962 asked the U. S. Interior Department to request that the Federal Power Commission require fishways around four dams on the lower Susquehanna. Since the fishways could cost as much as \$10 million, a comprehensive study was planned to determine if the river would support restored runs of American shad.

The Susquehanna shad study is a cooperative endeavor by fishery agencies of New York, Pennsylvania, and Maryland, four electric power companies that have dams along the river, and the U. S. Fish and Wildlife Service.

The results so far have been gratifying. In June 1964, about 16 million shad eggs from the Columbia River in the Pacific Northwest were flown to the Susquehanna. Biologists placed the eggs in hatching boxes in the Susquehanna within 24 hours after they had been taken from the Columbia. An additional 3.5 million shad eggs were taken from the Susquehanna Flats area of Chesapeake Bay for use in the study.

Many of the young fish that hatched from those transplanted eggs have now successfully migrated to sea past four dams on the Susquehanna. The growth rate for those yearling shad averaged nearly 1 inch per month.

Shad eggs from the Columbia and from the Susquehanna Flats were also used in bio-assay studies of water from the Susquehanna River. The bio-assays have helped substantiate field observations that waters of the Susquehanna River, except possibly one area polluted by mine drainage, are suitable for hatching of shad eggs and the rearing of young shad. Shad hatched in the upper waters of the river in the spring of 1964 were able to move down through the polluted area with little if any noticeable effect on the fish.

The study will now focus on whether adult shad will migrate upstream through the still waters behind dams. To do this, a fish-trapping facility is to be built at Conowingo Dam near the mouth of the Susquehanna River. The trap, which will catch adult shad for transplanting upstream, will be in operation when the shad runs come up from Chesapeake Bay in the spring of 1965.

Adult shad trapped at Conowingo will be tagged and released in the forebay above Conowingo Dam and near Harrisburg, Pa. Two types of tags will be used--regular numbered tags and a newer type that includes a sonar device. The sonar tags give off signals that can be picked up by biologists using hydrophones. Eavesdropping on the fish will indicate how well they orient themselves to continue the upstream migration. Sportsmen will be asked to help supply information with tags which they recover.

Other research activities to be continued in the spring of 1965 include further hatching box and bio-assay studies to define the tolerance of shad eggs and young to polluted water, and water chemistry analysis of the river in areas that are polluted by acid drainage from coal mines.

Note: See *Commercial Fisheries Review*, May 1963 p. 41, Aug. 1963 p. 48.



Shellfish

SEED CULTURE PROGRAMS CONDUCTED BY ATLANTIC COASTAL STATES:

Comparing techniques for artificially propagating oysters and clams was the main objective of the first Shellfish Seed Culture Conference held at New York State University, Stony Brook, N. Y., earlier this year. The head scientist of oyster research at the Vir-

ginia Institute of Marine Science, Gloucester Point, Va., presented available information on the Institute's successful efforts in artificially breeding and culturing oysters. A program of oyster breeding at that Institute is being conducted to obtain MSX-resistant brood stock. Hatchery and pond culture has been necessary in northern states because natural setting is inadequate.

It was disclosed during the Conference meetings that 5 Federal or state agencies and 9 private groups or companies, ranging in location from Cape Cod to Florida, have started hatchery or pond-culture programs to breed shellfish. Informal reports and discussions by oyster farmers and biologists revealed that nursery areas for newly-set spat are the most pressing problem.

The Institute scientist said, "We are moving ahead very well in our program to provide MSX-resistant brood oysters. When we have suitable brood stock, oystermen must be prepared to breed in hatcheries or secluded ponds away from the natural spatfall. With present facilities the Institute can only provide brood stock, and it cannot attempt to breed resistant oysters in quantities. Therefore, oystermen must be thinking ahead about their own controlled breeding sanctuaries." He reported that Virginia oystermen are interested in pilot hatcheries, and indicated that the Institute is encouraging such efforts to provide experience. The ultimate step in repopulating MSX-infested waters in Virginia depends upon breeding commercial quantities of resistant oysters in hatcheries, ponds and natural bodies of water with restricted flow to retain larvae.

Commercial hatcheries are not feasible in Virginia at existing prices of oysters, the Institute scientist believed, although improved techniques learned through pilot operations may reduce production costs considerably. In the Long Island area, prices of \$15 or more per bushel encourage controlled culture methods. Long Island oysters are sold as raw oysters on the half-shell at fancy hotels and restaurants, whereas Chesapeake Bay oysters are generally sold freshly shucked for nationwide distribution and home eating.

The conference at Stony Brook was attended by 60 persons representing every coastal state from Virginia to Maine. The conference was jointly sponsored by the Oyster Institute of North America, the Bureau of Marine Fisher-

ies of the New York Conservation Department, and the Biology Department of New York State University. (Virginia Institute of Marine Science, Gloucester Point, March 4, 1965.)

Shrimp

BREADED PRODUCTION, 1964:

United States production of breaded shrimp during 1964 amounted to about 90.7 million pounds--an increase of 19 percent as compared with 1963.

The Gulf States ranked first in the production of breaded shrimp in 1964 with 55.0 mil-

lion pounds, followed by the Atlantic States with 28.4 million pounds, and the Pacific States with 7.3 million pounds.

BREADED PRODUCTION, OCTOBER-DECEMBER 1964:

United States production of breaded shrimp amounted to about 21.1 million pounds during the fourth quarter of 1964, according to preliminary data.

The Atlantic and Gulf States ranked first in the production of breaded shrimp with 19.5 million pounds.

Table 1-U.S. Production of Breaded Shrimp by Months, 1963-64

| Month | 1/1964 | 1963 |
|-----------|--------------|--------|
| | (1,000 Lbs.) | |
| January | 7,347 | 2/ |
| February | 8,045 | 2/ |
| March | 7,249 | 2/ |
| April | 7,027 | 2/ |
| May | 6,171 | 2/ |
| June | 6,588 | 2/ |
| July | 8,641 | 2/ |
| August | 7,299 | 2/ |
| September | 7,830 | 2/ |
| October | 9,169 | 7,390 |
| November | 7,852 | 6,129 |
| December | 7,460 | 5,513 |
| Total | 90,678 | 76,216 |

1/Preliminary.
2/Not available.

Table 2-U.S. Production of Breaded Shrimp by Areas, 1963-64

| Area | 1/1964 | | | 1963 | | |
|----------|---------------|------------------------|------------------|---------------|------------------------|------------------|
| | Plants No. | Quantity 1,000 Lbs. | Value \$1,000 | Plants No. | Quantity 1,000 Lbs. | Value \$1,000 |
| Atlantic | 19 | 28,449 | 19,263 | 24 | 23,545 | 15,752 |
| Gulf | 23 | 54,942 | 38,683 | 27 | 47,054 | 33,551 |
| Pacific | 8 | 7,287 | 5,095 | 10 | 5,617 | 4,224 |
| Total | 50 | 90,678 | 63,041 | 61 | 76,216 | 53,527 |

1/Preliminary.

Table 3 - U. S. Production of Breaded Shrimp, 1954-64

| Year | Quantity 1,000 Lbs. | Value \$1,000 |
|--------|------------------------|------------------|
| 1/1964 | 90,678 | 63,041 |
| 1963 | 76,216 | 53,527 |
| 1962 | 76,803 | 62,230 |
| 1961 | 73,795 | 55,089 |
| 1960 | 70,348 | 47,015 |
| 1959 | 69,764 | 45,314 |
| 1958 | 60,865 | 43,622 |
| 1957 | 51,085 | 37,764 |
| 1956 | 50,888 | 37,301 |
| 1955 | 38,991 | 26,907 |
| 1954 | 24,802 | 17,579 |

1/Preliminary.

Table 1 - U. S. Production of Breaded Shrimp by Months, October-December 1964

| Month | Total 1,000 Lbs. |
|------------------------|---------------------|
| October | 7,950 |
| November | 6,662 |
| December | 6,442 |
| Total 4th Qtr. 1964 1/ | 21,054 |
| Total 4th Qtr. 1963 | 19,032 |

1/Preliminary.

Table 2 - U. S. Production of Breaded Shrimp by Areas, October-December 1964

| Area | 1964 | | 1963 | |
|-----------------------------|------------------|---------------|------------------|---------------|
| | No. of Plants | 1,000 Lbs. | No. of Plants | 1,000 Lbs. |
| Atlantic and Gulf States | 34 | 19,503 | 35 | 17,556 |
| Pacific States | 8 | 1,551 | 8 | 1,476 |
| Total | 42 | 21,054 | 43 | 19,032 |

REVISED RULES AND SPECIFICATIONS ON FUTURES TRADING IN FROZEN SHRIMP:

New rules and specifications applicable to futures trading in frozen shrimp for delivery in October, December 1965, February and April 1966, were issued in March 1965, by the Chicago Mercantile Exchange, Chicago, Ill. The rules apply specifically to raw, frozen, headless shrimp which have been caught and processed in the Western Hemisphere--brown, white, or pink in color.

Trading under the new rules and specifications opened April 1, 1965, on the Chicago Mercantile Exchange, at which time buyers and sellers negotiated contracts for delivery in October 1965.

The new rules and specifications as published follow:

**FUTURES
TRADING IN**

**FROZEN
SHRIMP**

(BROWN, PINK AND WHITE)



CHICAGO MERCANTILE EXCHANGE
111 N. FRANKLIN STREET, CHICAGO, ILL. 60601

The rules in this chapter shall apply specifically to raw, frozen, headless shrimp, brown, white or pink color. Method of trading, clearing, settlement and delivery of contracts as well as any other matters not specifically covered by this chapter shall be governed by the rules of the Exchange.

CLASSIFICATION AND GRADE—All futures contracts for Frozen Shrimp shall be U.S. Grade A raw, frozen, headless shrimp with a count of 15/20 to the pound, which have been caught and processed in the Western Hemisphere. All shrimp must meet the requirements of standards as promulgated by the United States Department of Interior, Fish and Wildlife Service.

FUTURES CALL—Futures contracts shall be scheduled for trading and for delivery in such months as may be determined by the Board of Governors.

TRADING UNIT ON FUTURES CALL—All transactions cleared through the Clearing House shall be in units of 5,000 pounds.

PRICE FLUCTUATIONS ON FUTURES CALL—Minimum price fluctuations on the futures call shall be 1/10 cents per pound.

DELIVERIES AND SUBSTITUTIONS ON THE FUTURES CALL—To qualify for delivery Frozen Shrimp shall be tendered for delivery in accordance with requirements of the Exchange rules and with specifications announced by the Board of Governors prior to the opening of the contract. The weight of a delivery unit shall be 5,000 pounds and the grade thereof shall comply with the contract of sale subject to such substitutions as are allowed.

A delivery unit of 5,000 pounds shall consist of 100 master cartons, each master carton containing ten 5-pound packages. The unit shall consist of not more than 3 lots or sub-lots with no lot or sub-lot weighing less than 1,000 pounds. The entire unit must be processed by one packer and must be stored during any one calendar month. Each delivery unit must be uniform as to color.

Frozen Shrimp which have been in storage more than eight months are not deliverable except that a delivery unit delivered in accordance with the rules during a delivery month is eligible for re-delivery through that month.

Allowable variations in quantity of a delivery unit are as follows: Minimum delivery unit: 4,750 pounds—95 master cartons of 50 pounds each. Maximum delivery unit: 5,250 pounds—105 master cartons of 50 pounds each. A weight tolerance of 3% shall be permitted. Payment shall be made on the basis of the exact quantity delivered.

All shrimp delivered on Exchange contracts shall be of good pack, glazed and packed in paperboard cartons which must meet all Federal regulations governing labeling and packing.

All shrimp shall conform in every respect to the provision of the Federal Food, Drug and Cosmetic Act together with all regulations promulgated thereunder.

Inspection certificates must be in good standing up to 5:00 P. M. on the business day following day of tender.

For delivery shall be frozen shrimp in approved warehouses in Chicago. Delivery in approved warehouses west of the eastern borders of the states of Montana, Wyoming, Colorado and New Mexico may be made at 3¢ per pound allowance. Delivery may be made in approved warehouses outside of Chicago and east of the eastern borders of Montana, Wyoming, Colorado and New Mexico at an allowance of 2¢ a lb.

Permissible substitutions shall be:

- (1) Frozen shrimp with a count of less than 15 to the pound and meeting all other requirements of these rules shall be deliverable at par.
- (2) Frozen shrimp with a count of 21/25 to the pound and meeting all other requirements of these rules shall be deliverable at 8¢ a pound allowance.

- (3) Grade B shrimp meeting all other requirements of these rules and grading 85 to 89 points shall be deliverable with an allowance of 1¢ a pound. Grade B shrimp grading 80 to 84 points shall be deliverable with an allowance of 3¢ a pound.

Each delivery unit must be uniform as to count per pound.

INSPECTION CERTIFICATES—Inspections will be made for members only and in the order of applications filed except precedence shall be given to inspections relating to transactions made on Exchange.

An official inspection certificate shall be final. No re-inspection upon the same application shall be permitted.

No member shall order an official inspection on another member's goods without the written order of such member.

An official inspection certificate on Frozen Shrimp issued by the Exchange shall state the location and the grade established. It shall bear the signature of the President or Assistant to the President and the seal of the Exchange. It shall state the date of inspection and the time when the certificate expires. This certificate shall be based upon an inspection certificate of the United States government and such government certificate (or a copy thereof) shall in all cases accompany the Exchange certificate.

The removal of the commodity from the place or location designated on the inspection certificate invalidates the certificate.

The charge for inspection shall be the cost plus 50¢ per lot for Exchange certificate.

LIFE OF INSPECTION CERTIFICATE—An Exchange inspection certificate for quality or weights of frozen shrimp in cold storage shall expire on the first business day of the sixth month following date of inspection provided the shrimp have remained in the same warehouse and have been kept under proper refrigeration in the meantime.

STORAGE CHARGES ON FUTURES CALL TO BE ON A PRO RATA BASIS—On all deliveries made on the futures call the seller must assume storage up to 5:00 P. M. on the second business day after the date of delivery. The proration shall be on the basis of 1/30th of the prevailing monthly storage rate at the particular warehouse raised to the nearest 5¢ and multiplied by the number of days remaining to the next storage expiration date (all months figured on the basis of 30 days). In no case shall handling charges be included in such proration. The storage charges shall be paid in advance by the person holding shrimp on the storage expiration date and pro rata charges prepaid by such holder shall be added to and shown on the tender notice.

SPECULATIVE POSITION LIMITS—No member for himself or for a customer, and no firm for its own account or for the account of a customer, may carry, control, or have a proprietary interest in more than a total of 200 frozen shrimp contracts, with a maximum of 200 in any one contract month, nor shall any individual, customer, or firm exceed the above limits in any single day's trading.

Note: See *Commercial Fisheries Review*, April 1964 p. 30, December 1963 p. 42.



South Atlantic Fisheries Explorations and Gear Development

ELECTRIC SHRIMP TRAWL STUDIES:

M/V "Oregon" Cruise 98 (February 1965): To test and evaluate an electric shrimp trawl on the royal-red shrimp grounds off St. Augustine, Fla., was one objective of this two-phase cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel *Oregon*. Another objective, carried out during the second phase of the cruise, was to

obtain photographic data on the royal-red shrimp grounds.

Five days were spent testing and evaluating the electric shrimp trawl on the royal-red shrimp grounds off St. Augustine, during phase I completed February 13, 1965. The trawl was equipped with a specially designed, battery powered, deep-water pulse generator capable of withstanding pressures in the 200-fathom depth range.

It was not possible to follow the normal procedure of dragging both an electric and a nonelectric trawl simultaneously because of physical and mechanical conditions. Therefore, consecutive drags duplicated as closely as possible, were made. A total of 23 drags



Housing of underwater movie camera attached to its frame in the mouth of a shrimp trawl. Used by the M/V Oregon for motion picture photography of both trawl performance and shrimp reaction behavior.

was completed during that trial. The electrical components functioned normally, and the gear did not present any handling problems. The results from the relatively small number of drags were generally inconclusive, although the largest individual catch of 94 pounds (for a 2-hour drag) was made in the electric net. The total catches from both types of trawls were nearly identical. One noteworthy preliminary result was that whereas the catches of the nonelectric trawl were equally divided by weight between shrimp and fish, the catches of the electric trawl had half the weight of fish. From the results obtained during this cruise, procedures were developed which will allow a continuing program to fully evaluate the effectiveness of the electric gear in this fishery.

Twelve days were spent in the second phase of the cruise (completed February 25, 1965) with the objective of obtaining photographic data on the royal-red shrimp grounds. Due to extreme surface weather conditions and the strong current of the Gulf Stream (estimated at 4 knots), the CA-8 still camera sled was unable to reach bottom. Because of the high current speed during the period, the shrimp trawls were not reaching their maximum configuration. This caused the movie camera system to become improperly positioned to record the bottom.

A total of 47 drags was made with a 40-foot flat trawl in depths ranging from 150 to 300 fathoms. The best depth was found to be 220-225 fathoms and 42 of the 47 tows made

were completed there. Shrimp catches were light, with a total of 676 pounds of royal-red caught for the entire cruise. The predominant species of trash fish were hake (Merluccius albidus), cod (Gadidae), sea robin (Peristedion sp.), rat-tail (Macrouridae), and crab (Cancer sp. and Geryon sp.).

Severe weather conditions caused two temporary halts to the operations in the Gulf Stream. That time was spent dragging in the 30- to 40-fathom depth range off Cape Kennedy and Bethel Shoals for brown shrimp (Penaeus aztecus). Some 12 commercial shrimp vessels were working those grounds, which had been first located during a previous Oregon cruise. Exploration during 19 drags showed that trawlable bottom extended at least several miles south of the area previously delineated.

Note: See Commercial Fisheries Review, April 1965 p. 36, March 1965 p. 49.



South Carolina

FISHERIES BIOLOGICAL RESEARCH PROGRESS, JANUARY-MARCH 1965:

A report on the progress of biological research by the Bears Bluff Laboratories, Wadmalaw Island, S. C., for January-March 1965, follows:

Shrimp Studies: Regular station trawling throughout coastal waters during January-March 1965 showed the presence of a fairly good wintering-over population of white shrimp. This was not the case during the same periods in 1963 and 1964, both of which were poor years for white shrimp. Milder water temperatures throughout the State during the past quarter may be responsible for the increased abundance of white shrimp this year.

The average catch per unit of effort for white shrimp in experimental trawling was about 15 times as great during January-March 1965 as it was for the same period in 1964, and about 5 times that of the same period in 1963 (table). While not as plentiful as in January-March 1962, white shrimp during the present quarter are sufficiently abundant to produce a fair crop of "roe" shrimp this spring, if conditions remain favorable.

The numbers of spot in coastal waters increased considerably during this quarter as compared with that period of 1964,

whereas croaker declined in abundance for the two periods (table). Blue crabs, both mature and immature, increased significantly in experimental trawling during the January-March quarter this year. The general increase in the abundance of most commercial species during this quarter as compared with that of 1964 as mentioned in the case of white shrimp, may be due to mild water temperatures experienced this winter.

North Carolina Average Catch Per Unit of Effort for Various Species at Regular Shrimp Survey Stations, January-March, 1962-65

| Year | Spot | Croaker | White Shrimp | Blue Crabs | |
|------|------|---------|--------------|------------|----------|
| | | | | Mature | Immature |
| 1965 | 7.2 | 5.7 | 15.7 | 6.2 | 12.0 |
| 1964 | 0.7 | 9.5 | 0.1 | 3.2 | 9.4 |
| 1963 | 7.9 | 10.2 | 3.2 | 8.1 | 8.6 |
| 1962 | 22.1 | 18.6 | 26.3 | 14.1 | 23.9 |

Experimental plankton tows throughout coastal waters during January-March 1965 indicated that brown shrimp postlarvae were over two times as abundant as during the same period of 1964. Those postlarvae began to enter coastal sounds and inlets in significant numbers by February 8, and continued to recruit in abundance through February 28, at which time their numbers began to decline. The recruitment of brown shrimp postlarvae was about one month earlier this year than last, and this is quite possibly a result of warmer water temperatures during the past fall and winter.

The abundance of postlarval brown shrimp during the first quarter of the year for the past five years shows a distinct relationship between these numbers and the commercial catch in June, July, and early August. If this same pattern continues in 1965, then the catch of brown shrimp in those months should be slightly above average. This, of course, is provided no excessive mortalities of young shrimp occur in the nursery areas up to June, as was the case in 1960 when a cold snap in March apparently caused considerable mortality of postlarvae. Although no cold snaps have occurred which have caused sudden lowering of water temperatures to date, excessive rainfall in February and March may possibly have considerable effect on the young shrimp. The outlook is at this time, nonetheless, considerably better than in 1964, and if a second postlarval peak occurs in early April as has been the case in most years, it will be improved even more.

Pond Cultivation: Experimental shrimp ponds at Bears Bluff Laboratories were drained, repaired, and refilled during this quarter.

Stocking with postlarval brown shrimp has begun and will continue through April.

Several small-scale pond cultivation experiments were carried out in a temperature-controlled 3,000-gallon concrete tank during this quarter. The tank was stocked with postlarval shrimp less than $\frac{1}{2}$ inch in total length in late February, and by mid-March the young shrimp were already over one inch long. The water in the tank was kept at 70°-75° F. and the shrimp were fed heavily on chopped fish and green algae.

In another small-scale experiment using a heated (70°-75° F.) concrete tank, juvenile channel bass were stocked on January 6, 1965. These fish ranged in total length from 2½-5 inches, averaging 3½-4 inches, when stocked. Under natural conditions, young channel bass grow very little if at all during cold weather, but in the heated tank with heavy feeding of shrimp, they showed considerable growth. By March 18 the fish ranged from 3½ to 7½ inches in total length, averaging about 6 inches. This rate of growth is probably comparable to that under natural conditions during the summer months.

Note: See *Commercial Fisheries Review*, Mar. 1965 p. 51.



States Legislation

ACTIONS AFFECTING FISHERIES:

Following is a supplemental list of proposed State Legislative actions affecting fisheries. The bills listed are those introduced during the current session of the various State Legislatures. (*Information Letter*, National Cannery Association, March 20, 1965.)

Alaska: SCR 11 relates to fisheries research projects in the northwest portion of the States.

S. 112 relates to the stabilization, maintenance, quality control, and development of the shellfish industry of the State; would create an Alaska Shellfish Marketing and Quality Control Advisory Board. It also would provide for an assessment on shellfish processors in the State to finance the Act.

S. J. R. 48 requests full support through appropriations for the Commercial Fisheries Research and Development Act of 1964.

S. J. R. 46 calls for a national department of Fisheries.

Maine: H. 849 relates to the use of sardine tax revenues for advertising.

H. 938 would place a tax on lobsters shipped beyond the State.

Maryland: S. 464 would change laws on issuing and suspending licenses of canneries and frozen food processing plants.

H. 1116 would exclude canned and sterilized shellfish from State limitations on the importation of shellfish.

H. 1108 would give the State Health Department jurisdiction over equipment used in making or preparing food including cannery equipment.

H. 1159 defines the sanitation of equipment in connection with making and preparing food, including cannery equipment.

Note: See Commercial Fisheries Review, April 1965 p. 37.



Transportation

SPECIAL "VANSHIPS" AND "TRAILERSHIPS" FACILITATE HANDLING OF FISH AND OTHER CARGO IN STEAMSHIP TRADE BETWEEN ALASKA AND WASHINGTON STATE:

The "vanships" Nadina and Tonsina, coastal freighters of a west coast steamship company, are making regular trips between Seattle, Wash., and the railhead port of Whittier in central Alaska. The vessels carry much of their cargo in special vans on deck. The vans are held firmly in place by a framework of steel posts with fixed metal heads resembling "lollipops." Loading and unloading is done by a dock crane. The vans are 24 feet long, 8 feet wide, and 8 feet high. One van makes a load for a truck trailer; a railway flatcar will hold two. Some of the vans have temperature-control facilities, which can be plugged into the ship's electrical system to maintain perishable freight at regulated temperatures. The Nadina and the Tonsina can each carry 175 vans, in addition to automobiles and other freight. (The Seattle Times, January 31, 1965.)



The vanship vessel Nadina being loaded at Seattle, Wash., with special vans for shipment to Whittier, Alaska.

Another shipping company is operating the "trailerships" Seattle and Anchorage directly between Seattle, Wash., and the Alaska ports of Anchorage and Kodiak. Each of the trailerships is capable of carrying 166 35-foot truck trailers and also has 425,000 cubic feet of space for break bulk cargo. The Seattle and the Anchorage each carry an electric crane to load and discharge the trailers. The trailers are 35 feet long, 8 feet wide, and 8½ feet high. Some of the trailers have temperature-control facilities. These units operate on either electric current or liquid propane gas. The trailers are designed for land hauling by any highway tractor having a minimum pin-to-cab clearance of 64 inches. They can also be hauled by rail.

Strengthened for navigation in ice, the Seattle and the Anchorage are providing year-round service to the port of Anchorage and central Alaska. They are reported to be the first deep-draft commercial freighters to navigate ice-bound Cook Inlet in winter. (Anchorage Daily Times, December 17, 1964, and other sources.)

The vanships and the trailerships with their containerized freight can be loaded and unloaded much faster than ordinary freighters. This cuts terminal handling charges which are an important part of ocean shipping costs.

Frozen halibut, salmon, sablefish, king crab meat and sections, and other fishery products are some of the products shipped from Alaska in the vans and trailers.



Tuna

BEHAVIOR STUDIES AID UNITED STATES FISHING INDUSTRY:

Research on the behavior of tuna, whether in the open sea or in captivity, is conducted by the U. S. Bureau of Commercial Fisheries Biological Laboratory at Kewalo Basin, Honolulu, Hawaii, and at the Tuna Resources Laboratory in La Jolla, Calif. The purpose is to find out what tuna can see, hear, and smell, what bait will entice them, and what net or line will best catch and hold them. In this way, scientists hope to learn how to predict tuna response to both natural and artificial stimuli in the ocean. Information from the results of the research will be passed on to the United States tuna fishing industry.



Fig. 1 - Skipjack tuna swimming in shoreside tank at the U. S. Bureau of Commercial Fisheries Kewalo Basin Biological Laboratory, Honolulu, Hawaii.

At La Jolla, where there are no facilities for holding captive tuna, research is being done from the Bureau's research vessels. Research on the vessels is focused on the response of the fish to fishing gear, its behavior during the entire fishing operation, and its attempts to escape a net.

After the tuna are caught by the Bureau's research vessel, they are inspected for damage and if found to be all right are lowered into a portable tank aboard the vessel. The line holding each fish is slackened, allowing the tuna to "throw off" the hook.

When the tank has its quota, the vessel heads for its home port of Honolulu. At Honolulu, the portable tank is moved by crane from vessel to shoreside tanks of the Bureau's Kewalo Basin Biological Laboratory where they are trained and studied. The portable tank is lowered into the larger tank and the tuna allowed to swim out of the smaller one.

While in the tank, tuna that may naturally swim counterclockwise can be trained to alter that pattern at the sound of a buzzer and make sharp turns through an opening in a barrier net. They can also be trained to respond to vertical and horizontal patterns of light. When one pattern is shown to the tuna and it makes a correct move, it is rewarded with food; when the tuna makes a wrong move, it receives an electric shock.

Fishing for Tuna: Practical information of much value to the United States tuna fishing fleet has already come out of the Bureau's research. The information helps answer two important questions. (1) Where in the vast ocean is one most likely to find tuna? and (2) How far down should one drop his nets? Tuna live in the warm upper layers of the ocean, and they are sensitive to temperature changes. Their distribution and movements vary from month to month because features in their environment change as they follow their food sources.

In the eastern Pacific, the upper 500 feet of the ocean is not as uniform in temperature as the atmosphere above the sea. The ocean contains a layer or zone of water called the thermocline, where there is a rapid change



Fig. 2 - Two-pound skipjack tuna in shoreside tank.

in temperature with depth. Bureau scientists have learned that where these sandwiched cold-water layers occur less than 50 feet from the surface, and where the temperature change is very rapid, the chances of catching tuna with a purse seine are improved by 65 percent. The depth of the thermocline is located with a bathythermograph (BT), a device that also records temperature. Based on Bureau's success with that instrument, more and more commercial tuna vessels are being equipped with it.

The Bureau already has achieved what it calls "fair reliability" in predicting the whereabouts and abundance of skipjack tuna in the waters off Hawaii, and of albacore and bluefin tuna along the West Coast. The scientists base their predictions on the time in early spring when the ocean begins to warm and on changes in the movement of the different types of water. They then can predict when the fish are likely to show up, in what abundance, and whether they will be early or late in reaching the area. As the researchers learn more about the interrelations between tuna and the ocean, their predictions will become more precise.

Tuna Research in the Ocean: Tuna research work in the Pacific Ocean is being carried on by the Bureau's research vessels Charles H. Gilbert and Townsend Cromwell, which are equipped with observation chambers below the waterline.

To the fishery scientists, the tuna's world is made up of schools, each composed of several tons of fish, usually of the same species and size. If a school is not feeding, it may swim along at 6 to 8 knots for hours, with bursts of speed up to 20 knots for short periods. Most of the time, tuna swim with their mouths open. This allows water containing oxygen to flush over their gills. Should a tuna stop swimming, it would suffocate.

Scientists study the response of tuna to different types of bait and the behavior of the bait. Bait that is silvery and fast moving, such as sardines and anchovies, is good. Live bait is better than dead bait, and the research vessel is equipped with tanks to keep bait alive.

Although skipjack tuna are a schooling species, they break ranks when food stimuli appear and pursue the prey as individuals. Superimposed over the 4 or 5 dark stripes running from tail to head of the skipjack are

alternating, vertical, dark and light bars. These bars fade slowly when the stimuli disappear and reappear when new food stimuli appear. The excitement of skipjack going after their food is described as a "feeding frenzy." Scientists also are interested in the reaction of tuna to specific sounds, particularly those associated with fishing operations. The sounds are transmitted to schools of tuna and their reactions are carefully observed.

Tuna Research in Holding Tanks: Doing research on tuna at sea has certain limitations. Tuna are fast and do not stay long enough in one spot to satisfy the scientists' need for close and continual study. The big problem, however, was how to keep tuna alive in tanks so that experiments could be conducted. This was achieved by the U. S. Bureau of Commercial Fisheries in 1960 when it found a way to eliminate manual handling of skipjack from the time of capture until they were placed in shoreside experimental tanks. With this technique the fish now live up to 6 months in captivity.

Research at the Bureau's Biological Laboratory at Honolulu emphasizes studies regarding tuna hearing and sight. When this knowledge is gained it may be useful in designing fishing gear less visible to fish. Although the Bureau believes some of its findings are tentative and cannot be applied over too broad a base, researchers are confident they have gathered much information that will pay off in greater fishing success for United States fishermen.



U. S. Fishing Vessels

U. S. FISHERMEN ADVISED BY COAST GUARD TO STUDY NEW INTERNATIONAL RULES OF THE ROAD:

United States fishermen operating in international waters were advised by the U. S. Coast Guard, March 8, 1965, to take a long look at the revised 1960 International Rules of the Road before they go into effect September 1, 1965. The new rules make substantial changes in light requirements, fog-signal procedures, and other important aspects of Rules of the Road for fishing vessels on the high seas.

One of the most important changes in the revised rules, the Coast Guard said, is in

Rule 9 which prescribes the navigation lights and shapes to be shown by fishing vessels in international waters. Under the new Rule 9 fishermen will be required to show either a red or a green light carried vertically in line over a white light. The red-over-white combination of lights will apply to a vessel fishing with lines or nets, except trolling lines, and the green-over-white arrangement will indicate a vessel trawling. This is in sharp contrast to the present rule which requires use of a single all round white light, a vertical triangular pattern of white lights, or a tri-colored lantern. Under the new rule most fishermen operating on the high seas will have to mount new lights, the Coast Guard said.

Instead of the basket used under existing rules as a day shape to show a vessel engaged in fishing, fishermen under the new Rule 9 will have to use a black shape, consisting of two cones with their points together, vertically aligned one over the other.

The Coast Guard also called attention to important changes in fog-signal procedures under the revised International Rules of the Road. They will require that vessels engaged in fishing, under way, or at anchor in restricted visibility sound "... at intervals of not more than 1 minute, three blasts in succession, namely one prolonged blast followed by 2 short blasts."

The foregoing changes, however, are only a small sampling of the many important modifications in the revised rules. To be on the safe side the Coast Guard urged that fishermen familiarize themselves with the 1960 International Rules of the Road under which many will have to operate after September 1, 1965.

The revised rules will not apply to waters governed by the Inland, Great Lakes, and Western Rivers Rules of the Road, the Coast Guard said. (U. S. Coast Guard, March 8, 1965.)

Note: Advance copies of the revised 1960 International Rules of the Road may be obtained from local Coast Guard Marine Inspection Offices or by writing to the Commandant (MVI-4), 1300 E Street NW., Washington, D.C. 20226. Coast Guard Marine Inspection Offices located in most of the major United States ports will be able to answer questions on the new regulations.

FISHERIES LOAN FUND AND OTHER FINANCIAL AID FOR VESSELS, JANUARY 1-MARCH 31, 1965:

From the beginning of the program in 1956 through March 31, 1965, a total of 1,614 applications for \$42,125,872 was received by

the U. S. Bureau of Commercial Fisheries, the agency administering the Federal Fisheries Loan Fund. By that date, 849 applications (\$18,982,544) had been approved, 535 (\$12,764,477) had been declined or found ineligible, 199 (\$7,768,392) had been withdrawn by the applicants before being processed, and 31 (\$596,685) were pending. Of the applications approved, 318 were approved for amounts less than applied for--the total reduction was \$2,013,474.

The following loans were approved from January 1 through March 31, 1965:

New England Area: Waldo D. Preston, Cape Elizabeth, Me., \$2,500; George A. Beal, Friendship, Me., \$1,000; Freeman C. Robinson, Vinalhaven, Me., \$5,242; and Mac Jac Corp., Atlantic City, N. J., \$9,900.

California: Joe Lewis Queen, Costa Mesa, \$7,770; James N. Blum, Eureka, \$40,000; Donald A. Koski, Fort Bragg, \$22,000; Fred A. Cefalu, Morro Bay, \$5,500; James N. Quisenberry, Rosemead, \$10,584; Everingham Bros. Bait Co., San Diego, \$75,000; George M. Gibney, Sausalito, \$10,362; and Stanley Haskin, Watsonville, \$29,257.

Pacific Northwest Area: Henry Kreitzberg, Portland, Oreg., \$15,000; Henry F. Eaton, Seattle, Wash., \$19,499; Ray Lunde, Seattle, Wash., \$14,800; and Ole Westby, Seattle, Wash., \$14,442.

Alaska: Turi Kivisto, Cordova, \$2,150; Barney J. Corgatelli, Jr., Kodiak, \$11,046; Lawrence Finlay, Kodiak, \$6,400; and Elwood E. Mathews, Sitka, \$8,502.

Great Lakes Area: Lewis O. Brooks and Harry F. Day, Cheboygan, Mich., \$15,000.

Under the Fishing Vessel Mortgage Insurance Program (also administered by the Bureau) during the first quarter of 1965, a total of 8 applications for \$872,835 was received. Since the program began (July 5, 1960), 72 applications were received for \$7,242,748. Of the total, 56 applications were approved for \$3,926,663 and 10 applications for \$2,637,835 were pending as of March 31, 1965. Since the mortgage program began, applications received and approved by area are:

New England Area: Received 13 (\$1,464,500), approved 9 (\$1,034,928).

California: Received 2 (\$1,262,000), approved 1 (\$557,000).

South Atlantic and Gulf Area: Received 44 (\$2,579,402), approved 38 (\$1,753,665).

Pacific Northwest Area: Received 8 (\$1,861,250), approved 5 (\$526,296).

Alaska: Received 5 (\$75,596), approved 3 (\$54,774).

The first applications for a Fishing Vessel Construction Differential Subsidy under the Bureau's expanded program were received December 1964. Through March 31, 1965, a total of 25 applications for \$3,600,000 had been received. Public hearings were held on 13 applications during that period, and one invitation to bid on a vessel has been released.

Note: See Commercial Fisheries Review, March 1965 p. 55.

DOCUMENTATIONS ISSUED AND CANCELLED:

December 1964: During December 1964, a total of 29 vessels of 5 net tons and over

Table 1 - U. S. Fishing Vessels 1/---Documentations Issued and Cancelled, by Areas, December 1964 with Comparisons

| Area (Home Port) | December | | Total | |
|---|-----------|-----------|------------|------------|
| | 1964 | 1963 | 1964 | 1963 |
| (Number) | | | | |
| Issued first documents 2/: | | | | |
| New England | 1 | 2 | 33 | 23 |
| Middle Atlantic | 1 | 1 | 11 | 18 |
| Chesapeake | - | 6 | 39 | 66 |
| South Atlantic | 4 | 6 | 50 | 77 |
| Gulf | 16 | 10 | 221 | 239 |
| Pacific | 6 | 8 | 141 | 160 |
| Great Lakes | 1 | - | 4 | 5 |
| Hawaii | - | - | 2 | - |
| Puerto Rico | - | - | 2 | 2 |
| Total | 29 | 33 | 503 | 590 |
| Removed from documenta- tion 3/: | | | | |
| New England | 2 | 5 | 53 | 48 |
| Middle Atlantic | 1 | 3 | 27 | 47 |
| Chesapeake | - | 2 | 29 | 25 |
| South Atlantic | 8 | 4 | 62 | 53 |
| Gulf | 11 | 7 | 106 | 118 |
| Pacific | 11 | 5 | 151 | 87 |
| Great Lakes | 1 | 1 | 14 | 15 |
| Hawaii | - | - | - | 3 |
| Total | 34 | 27 | 442 | 386 |

Note: For explanation of footnotes, see table 4.

Table 2 - U. S. Fishing Vessels--Documents Issued by Tonnage and Area, December 1964 2/

| Gross Tonnage | New England | Middle Atlantic | South Atlantic | Gulf | Pacific | Great Lakes | Total |
|---------------|-------------|-----------------|----------------|-----------|----------|-------------|-----------|
| (Number) | | | | | | | |
| 5-9 | - | - | - | 2 | - | - | 2 |
| 10-19 | - | - | - | 3 | 3 | 1 | 7 |
| 20-29 | - | 1 | - | 1 | - | - | 2 |
| 40-49 | - | - | - | 1 | - | - | 1 |
| 50-59 | - | - | - | 1 | - | - | 1 |
| 60-69 | - | - | - | 2 | - | - | 2 |
| 70-79 | - | - | 1 | 1 | - | - | 2 |
| 80-89 | - | - | 1 | 7 | - | - | 8 |
| 90-99 | - | - | 2 | - | - | - | 2 |
| 110-119 | 1 | - | - | - | - | - | 1 |
| 160-169 | - | - | - | - | 1 | - | 1 |
| Total | 1 | 1 | 4 | 16 | 6 | 1 | 29 |

Note: For explanation of footnotes, see table 4.

Table 3 - U.S. Fishing Vessels--Documents Issued by Vessel Length and Area, December 1964 2/

| Length in feet | New England | Middle Atlantic | South Atlantic | Gulf | Pacific | Great Lakes | Total |
|----------------|-------------|-----------------|----------------|-----------|----------|-------------|-----------|
| (Number) | | | | | | | |
| 27 | - | - | - | 1 | - | - | 1 |
| 31 | - | - | - | - | 2 | 1 | 3 |
| 33 | - | - | - | 1 | - | - | 1 |
| 34 | - | - | - | 1 | - | - | 1 |
| 38 | - | - | - | 2 | - | - | 2 |
| 39 | - | - | - | - | 1 | - | 1 |
| 45 | - | - | - | 1 | - | - | 1 |
| 46 | - | - | - | - | 1 | - | 1 |
| 49 | - | - | - | - | 1 | - | 1 |
| 50 | - | 1 | - | - | - | - | 1 |
| 62 | - | - | - | 2 | - | - | 2 |
| 63 | - | - | - | 1 | - | - | 1 |
| 64 | - | - | - | 1 | - | - | 1 |
| 66 | - | - | 2 | 5 | - | - | 7 |
| 67 | - | - | 2 | 1 | - | - | 3 |
| 73 | 1 | - | - | - | - | - | 1 |
| 82 | - | - | - | - | 1 | - | 1 |
| Total | 1 | 1 | 4 | 16 | 6 | 1 | 29 |

Note: For explanation of footnote, see table 4.

Table 4 - U.S. Fishing Vessels--Documents Issued by Vessel Horsepower and Area, December 1964 2/

| Horsepower | New England | Middle Atlantic | South Atlantic | Gulf | Pacific | Great Lakes | Total |
|--------------|-------------|-----------------|----------------|-----------|----------|-------------|-----------|
| 25 | - | - | - | 1 | - | 1 | 2 |
| 86 | - | - | - | 1 | - | - | 1 |
| 100-109 | - | - | - | 1 | 1 | - | 2 |
| 115 | - | - | - | 1 | - | - | 1 |
| 120 | - | - | - | - | 1 | - | 1 |
| 130 | - | - | - | 1 | - | - | 1 |
| 150 | - | - | - | 1 | - | - | 1 |
| 170 | - | - | - | 1 | 1 | - | 2 |
| 205 | - | - | - | 1 | - | - | 1 |
| 215 | - | - | - | - | 1 | - | 1 |
| 220-229 | - | - | - | 2 | 1 | - | 3 |
| 275 | - | 1 | - | - | - | - | 1 |
| 300 | - | - | 3 | 5 | 1 | - | 9 |
| 320 | - | - | - | 1 | - | - | 1 |
| 345 | - | - | 1 | - | - | - | 1 |
| 457 | 1 | - | - | - | - | - | 1 |
| Total | 1 | 1 | 4 | 16 | 6 | 1 | 29 |

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5

set tons and over.

2/There were 2 redocumented vessels in December 1964 previously removed from the records. Vessels issued first documents as fishing craft were built: 24 in 1964; 1 in 1962; 1 in 1959; and 3 prior to 1947.

3/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.

Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

was issued first documents as fishing craft, as compared with 33 in December 1963. There were 34 documents cancelled for fishing vessels in December 1964, as compared with 27 in December 1963.

November 1964: During November 1964, a total of 32 vessels of 5 net tons and over was issued first documents as fishing craft, as compared with 37 in November 1963. There

were 44 documents cancelled for fishing vessels in November 1964, as compared with 29 in November 1963.

Table 1 - U. S. Fishing Vessels 1/- Documentations Issued and Cancelled, by Areas, November 1964 with Comparisons

| Area (Home Port) | November | | Jan.-Nov. | | Total |
|---|----------|------|-----------|------|-------|
| | 1964 | 1963 | 1964 | 1963 | |
| (Number) | | | | | |
| Issued first documents ^{2/} : | | | | | |
| New England | 3 | 1 | 32 | 21 | 23 |
| Middle Atlantic | 1 | 1 | 10 | 17 | 18 |
| Chesapeake | 3 | 6 | 39 | 60 | 66 |
| South Atlantic | 7 | 6 | 46 | 71 | 77 |
| Gulf | 11 | 20 | 205 | 229 | 239 |
| Pacific | 5 | 2 | 135 | 152 | 160 |
| Great Lakes | 1 | 1 | 3 | 5 | 5 |
| Hawaii | 1 | - | 2 | - | - |
| Puerto Rico | - | - | 2 | 2 | 2 |
| Total | 32 | 37 | 474 | 557 | 590 |
| | | | | | |
| Removed from docu- mentation ^{3/} : | | | | | |
| New England | 9 | 2 | 45 | 43 | 48 |
| Middle Atlantic | 2 | 2 | 21 | 44 | 47 |
| Chesapeake | 1 | 4 | 20 | 23 | 25 |
| South Atlantic | 5 | 2 | 44 | 49 | 53 |
| Gulf | 13 | 11 | 75 | 111 | 118 |
| Pacific | 13 | 7 | 125 | 82 | 87 |
| Great Lakes | 1 | 1 | 10 | 14 | 15 |
| Hawaii | - | - | - | 3 | 3 |
| Total | 44 | 29 | 340 | 369 | 396 |

Note: For explanation of footnotes, see table 4.

Note: For explanation of footnotes, see table 4.

Table 2 - U. S. Fishing Vessels--Documents Issued by Vessel Length and Area, November 1964 2/

| Length in feet | New England | Middle Atlantic | Chesapeake | South Atlantic | Gulf | Pacific | Great Lakes | Hawaii | Total |
|----------------|-------------|-----------------|------------|----------------|------|---------|-------------|--------|-------|
| (Number) | | | | | | | | | |
| 28 | 1 | - | - | - | - | - | - | - | 1 |
| 29 | 1 | - | - | - | 1 | 1 | - | - | 3 |
| 30 | - | - | - | - | - | 1 | - | - | 1 |
| 31 | - | - | - | - | - | 1 | - | - | 1 |
| 34 | - | - | - | 1 | 1 | - | 1 | - | 3 |
| 35 | - | - | - | - | 2 | - | - | 1 | 3 |
| 36 | - | - | 1 | - | - | - | - | - | 1 |
| 37 | - | - | - | - | - | 1 | - | - | 1 |
| 38 | - | - | 1 | - | - | - | - | - | 1 |
| 40 | - | - | 1 | - | 1 | - | - | - | 2 |
| 44 | - | 1 | - | - | - | - | - | - | 1 |
| 49 | - | - | - | 1 | - | - | - | - | 1 |
| 51 | - | - | - | - | 1 | - | - | - | 1 |
| 62 | - | - | - | - | 1 | - | - | - | 1 |
| 64 | - | - | - | - | 1 | - | - | - | 1 |
| 66 | - | - | - | 3 | 3 | - | - | - | 6 |
| 67 | - | - | - | 2 | - | - | - | - | 2 |
| 104 | 1 | - | - | - | - | - | - | - | 1 |
| 128 | - | - | - | - | - | 1 | - | - | 1 |
| Total | 3 | 1 | 2 | 7 | 11 | 5 | 1 | 1 | 32 |

Note: For explanation of footnotes, see table 4.

Table 3 - U. S. Fishing Vessels--Documents Issued by Tonnage and Area, November 1964 2/

| Gross Tonnage | New England | Middle Atlantic | Chesapeake | South Atlantic | Gulf | Pacific | Great Lakes | Hawaii | Total |
|---------------|-------------|-----------------|------------|----------------|------|---------|-------------|--------|-------|
| (Number) | | | | | | | | | |
| 5-9 | 2 | - | 1 | 2 | 1 | 1 | - | - | 7 |
| 10-19 | - | 1 | 2 | - | 3 | 3 | 1 | 1 | 11 |
| 20-29 | - | - | - | - | 1 | - | - | - | 1 |
| 40-49 | - | - | - | 1 | 1 | - | - | - | 2 |
| 60-69 | - | - | - | - | 1 | - | - | - | 1 |
| 70-79 | - | - | - | - | 1 | - | - | - | 1 |
| 80-89 | - | - | - | - | 3 | - | - | - | 3 |
| 90-99 | - | - | - | - | - | - | - | - | - |
| 130-139 | 1 | - | - | 4 | - | - | - | - | 4 |
| 430-439 | - | - | - | - | - | 1 | - | - | 1 |
| Total | 3 | 1 | 3 | 7 | 11 | 5 | 1 | 1 | 32 |

Note: For explanation of footnotes, see table 4.

Table 4 - U. S. Fishing Vessels--Documents Issued by Vessel Horsepower and Area, November 1964 2/

| Horsepower | New England | Middle Atlantic | Chesapeake | South Atlantic | Gulf | Pacific | Great Lakes | Hawaii | Total |
|------------|-------------|-----------------|------------|----------------|------|---------|-------------|--------|-------|
| (Number) | | | | | | | | | |
| 25 | - | - | - | - | - | 1 | - | - | 1 |
| 60 | - | - | - | 1 | - | - | - | - | 1 |
| 100-119 | 1 | - | - | - | 2 | 1 | - | - | 4 |
| 120-129 | - | - | - | - | - | 2 | 1 | - | 3 |
| 130 | - | - | - | - | 1 | - | - | - | 1 |
| 150 | - | - | - | - | 1 | - | - | - | 1 |
| 160-169 | 1 | 1 | 1 | 1 | 1 | - | - | - | 5 |
| 170 | - | - | - | - | 1 | - | - | - | 1 |
| 180 | - | - | - | - | 1 | - | - | - | 1 |
| 220-229 | - | - | - | - | 1 | - | - | 1 | 2 |
| 250 | 1 | - | - | - | - | - | - | - | 1 |
| 300 | - | - | - | 5 | 3 | - | - | - | 8 |
| 420 | - | - | 1 | - | - | - | - | - | 1 |
| 1050 | - | - | - | - | - | 1 | - | - | 1 |
| Total | 3 | 1 | 3 | 7 | 11 | 5 | 1 | 1 | 32 |

^{1/} Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.

^{2/} There were 4 undocumented vessels in November 1964 previously removed from the records. Vessels issued first documents as fishing craft were built: 22 in 1964; 1 in 1959; 1 in 1947; and 5 prior to 1947.

^{3/} Includes vessels reported lost, abandoned, destroyed, sold abroad, etc.

Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

THREE NEW U. S.-BUILT SHRIMP TRAWLERS OPERATING OFF SOUTH AMERICA:

Three new United States-built shrimp trawlers are now operating on shrimp grounds off South America. They were the first vessels of a fleet costing \$1 million being built at a shipyard in Rockport, Tex., for a group of Florida firms. The vessels operate out of



Cayenne, French Guiana, where one of the owning companies has a new shrimp-processing plant.

The fleet has been specially designed by the Texas shipyard's general manager. The vessels are 72 feet in length, with steel hulls, and powered by diesel engines.

Like other United States shrimp vessels that are fishing South American shrimp grounds, the three new trawlers are manned by skeleton American crews, with deckhands to be recruited from the Guianas or West Indies. (*Fishing News*, London, February 26, 1965.)



U. S. Foreign Trade

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

United States imports of tuna canned in brine during January 1-February 27, 1965, amounted to 4,175,915 pounds (about 198,853 standard cases), according to preliminary data compiled by the U. S. Bureau of Customs. That was about the same as the 4,234,009 pounds (about 201,619 standard cases) imported during January 1-February 29, 1964.

The quantity of tuna canned in brine which can be imported into the United States during the calendar year 1965 at the 12½-percent rate of duty has not been announced; however, in 1964 the quota was 60,911,870 pounds (or about 2,900,565 standard cases of 48 7-oz. cans). Any imports in excess of that quota would have been dutiable at 25 percent ad valorem.

AIRBORNE IMPORTS OF FISHERY PRODUCTS, DECEMBER 1964:

Airborne fishery imports into the United States in December 1964 were up considerably from the previous month due to much larger shipments of shrimp from Venezuela.

Airborne fishery imports in the year 1964 totaled 10.6 million pounds with a value of \$5.7 million, a small increase over 1963.

Shrimp shipments by air from Venezuela were heavy throughout 1964 and accounted for 67 percent of the quantity and 61 percent of the value of the airborne fishery imports in

1964. Airborne shrimp shipments from other Caribbean countries declined in 1964 in line with a trend that started in 1963. (It is thought that some of the Caribbean shrimp producers have shifted to other means of transport.) The bulk of the 1964 airborne shrimp imports entered through the Customs District of Florida and consisted of fresh and frozen raw headless shrimp.

The main shellfish items other than shrimp imported by air in 1964 were northern lobsters from Canada and spiny lobster products from Central and South American countries. Brutish Honduras is the leading supplier of airborne imports of spiny lobsters.

| U. S. 1/Airborne Imports of Fishery Products, December 1964 and Years 1963-1964 | | | | | | |
|--|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Product and Origin 2/ | December | | Year | | Year | |
| | 1964 | | 1964 | | 1963 | |
| | Qty./ Lbs. | Value/ 1,000 | Qty./ Lbs. | Value/ 1,000 | Qty./ Lbs. | Value/ 1,000 |
| Fish: | | | | | | |
| Mexico | - | - | 320.5 | 64.7 | 264.8 | 70.0 |
| Canada | - | - | 14.8 | 4.8 | 2.2 | 0.9 |
| Other countries | 20.1 | 7.9 | 102.8 | 68.8 | 109.5 | 122.6 |
| Total fish | 20.1 | 7.9 | 438.1 | 138.3 | 376.5 | 193.5 |
| Shrimp: | | | | | | |
| Guatemala | - | - | - | - | 141.6 | 74.0 |
| El Salvador | - | - | 170.2 | 102.8 | 338.0 | 219.0 |
| Honduras | - | - | 10.3 | 3.8 | 99.8 | 52.3 |
| Nicaragua | - | - | 97.5 | 55.8 | 517.3 | 181.3 |
| Costa Rica | 40.2 | 20.5 | 350.4 | 187.3 | 644.8 | 308.4 |
| Panama | 192.5 | 124.0 | 1,262.9 | 789.4 | 1,633.0 | 890.2 |
| Venezuela | 1,314.7 | 687.4 | 7,120.4 | 3,486.9 | 5,048.2 | 2,297.9 |
| Ecuador | - | - | - | - | 111.6 | 39.4 |
| France | - | - | - | - | 2.6 | 0.9 |
| British Guiana | - | - | 10.5 | 5.2 | - | - |
| Mexico | - | - | 2.1 | 1.4 | 13.2 | 6.9 |
| Other countries | - | - | 13.1 | 6.9 | 19.1 | 11.5 |
| Total shrimp | 1,547.4 | 831.9 | 9,037.4 | 4,639.5 | 8,569.2 | 4,081.8 |
| Shellfish other than shrimp: | | | | | | |
| Canada | - | 0.5 | 316.6 | 175.2 | 213.3 | 109.2 |
| Mexico | - | - | 14.4 | 9.9 | 101.1 | 60.8 |
| British Honduras | 65.9 | 79.2 | 368.5 | 337.3 | 378.6 | 311.1 |
| Honduras | - | - | 80.3 | 82.6 | 17.0 | 7.0 |
| Nicaragua | 20.2 | 29.1 | 70.7 | 69.1 | 183.2 | 113.3 |
| Costa Rica | 43.0 | 40.0 | 62.1 | 54.7 | 73.8 | 60.1 |
| Jamaica | 12.3 | 20.2 | 75.6 | 83.4 | 86.6 | 67.3 |
| Other countries | 19.7 | 22.4 | 128.3 | 104.6 | 131.8 | 111.1 |
| Total | 162.0 | 191.4 | 1,116.5 | 916.8 | 1,185.4 | 839.9 |
| Grand total | 1,729.5 | 1,031.2 | 10,592.0 | 5,694.6 | 10,131.1 | 5,115.2 |

1/Imports into Puerto Rico from foreign countries are considered to be United States imports and are included. But United States trade with Puerto Rico and with United States possessions and trade between United States possessions are not included.

2/When the country of origin is not known, the country of shipment is shown.

3/Gross weight of shipments, including the weight of containers, wrappings, crates, and moisture content.

4/Not a part of shipment. Does not include U.S. import duties, air freight, or insurance.

Notes: These data are included in the overall import figures for total imports, i.e., these imports are not to be added to other import data published.

Source: United States Airborne General Imports of Merchandise, FT 380, December 1964, U.S. Bureau of the Census.

1/Imports into Puerto Rico from foreign countries are considered to be United States imports and are included. But United States trade with Puerto Rico and with United States possessions and trade between United States possessions are not included.

2/When the country of origin is not known, the country of shipment is shown.

3/Gross weight of shipments, including the weight of containers, wrappings, crates, and moisture content.

4/7-o.b. point of shipment. Does not include U.S. import duties, air freight, or insurance.

Note: These data are included in the overall import figures for total imports, i.e., these imports are not to be added to other import data published.

Source: United States Airborne General Imports of Merchandise, FT 330, December 1964, U.S. Bureau of the Census.

Fish fillets from Mexico were the leading finfish product (from a volume standpoint) imported by air in 1964 and 1963.

The airborne imports in both years included several high-value shipments of caviar.

The data as issued do not show the state of all products--fresh, frozen, or canned--but it is believed that the bulk of the airborne imports consists of fresh and frozen products.

* * * * *

PROCESSED EDIBLE FISHERY PRODUCTS, DECEMBER 1964:

United States imports of processed edible fishery products in December 1964 were up 7 percent in quantity and 4 percent in value from those in the previous month due mainly to larger imports of canned tuna, canned sardines, and canned oysters. The gain was partly offset by smaller imports of cod fillets, sea catfish fillets, and canned crab meat.

Compared with the same month in 1963, imports in December 1964 were up 25 percent in quantity and 26 percent in value. The increase extended to most fishery items, particularly groundfish fillets and blocks, flounder fillets, canned albacore tuna, canned sardines, and canned oysters. There was some decline in imports of canned tuna other than albacore.

U.S. Imports and Exports of Processed Edible Fishery Products, December 1964 with Comparisons

| Item | QUANTITY | | | | VALUE | | | |
|-----------------------|--------------------------|------|-----------|-------|------------------------|------|-----------|-------|
| | Dec. | | Jan.-Dec. | | Dec. | | Jan.-Dec. | |
| | 1964 | 1963 | 1964 | 1963 | 1964 | 1963 | 1964 | 1963 |
| | .. (Millions of Lbs.) .. | | | | .. (Millions of \$) .. | | | |
| Fish & Shellfish: | | | | | | | | |
| Imports ^{1/} | 53.6 | 42.9 | 551.3 | 536.3 | 17.3 | 13.7 | 169.1 | 157.4 |
| Exports ^{2/} | 5.9 | 4.3 | 50.9 | 34.5 | 3.0 | 2.1 | 26.6 | 16.6 |

^{1/}Includes only those fishery products classified by the U.S. Bureau of Census as "Manufactured foodstuffs." Included are canned, smoked, and salted fishery products. The only fresh and frozen fishery products included are those involving substantial processing, i. e., fish blocks and slabs, fish fillets, and crab meat. Does not include fresh and frozen shrimp, lobsters, scallops, oysters, and whole fish (or fish processed only by removal of heads, viscera, or fins, but not otherwise processed).

^{2/}Excludes fresh and frozen.

In January-December 1964, imports were up 3 percent in quantity and 7 percent in value from those in January-December 1963. During January-December 1964, there were larger imports of groundfish blocks (increase mainly from Canada and Iceland), flounder fillets, yellow pike fillets, and sea catfish fillets. Imports were also up for canned albacore tuna and canned sardines not in oil. But there was a decline in imports of most other canned fish import items (tuna other than albacore, crab meat, oysters, salmon, and sardines in oil).

Exports of processed edible fish and shellfish from the United States in December 1964 were down 12 percent in quantity and 9 percent in value from the previous month due mainly to lower shipments of canned salmon, sardines, and canned shrimp. In December 1964, shipments of canned salmon to the United Kingdom increased 6 percent but those to other countries were down 48 percent.

Compared with the same month of 1963, the exports in December 1964 were up 37 percent in quantity and 43 percent in value. The increase was due mainly to larger shipments of canned salmon and canned squid. Shipments of canned squid to Greece were down sharply compared with December 1963 but those to the Philippines were up about 800 percent.

Processed fish and shellfish exports for the 12 months of 1964 were up 48 percent in quantity and 60 percent in value from those in the same period of 1963. In 1964 there were much larger shipments of canned mackerel and canned salmon. Exports of canned shrimp and canned sardines in oil were also higher, but exports of canned sardines not in oil and canned squid (to Greece and the Philippines) were down.



Wholesale Prices

EDIBLE FISH AND SHELLFISH, MARCH 1965:

From February to March 1965, prices were seasonally lower for nearly all of the major fishery products listed in the wholesale price index. The March 1965 wholesale price index for edible fish and shellfish (fresh, frozen, and canned) at 108.3 percent of the 1957-59 average was down 1.3 percent from the previous month. Compared with March 1964, prices for a number of the major items were substantially higher this March with the overall index up 4.0 percent.

In the subgroup for drawn, dressed, or whole finfish, ex-vessel prices at Boston for large haddock in March 1965 dropped 11.8 percent from the previous month as a result of the usual seasonal increase in landings. Prices were lower at New York City for western frozen king salmon (down 2.9 percent), and prices at Chicago for Fresh Lake Superior whitefish were down from the high of the previous month. But Great Lakes round yellow pike wholesale prices were up 5 cents a pound because of very light supplies. From February to March 1965 the subgroup index was down 3.7 percent, but was 9.8 percent higher than

| Wholesale Average Prices and Indexes for Edible Fish and Shellfish, March 1965 with Comparisons | | | | | | | | |
|--|------------------|------|---------------------|-----------|-----------------------|-----------|-----------|-----------|
| Group, Subgroup, and Item Specification | Point of Pricing | Unit | Avg. Prices 1/ (\$) | | Indexes (1967-59=100) | | | |
| | | | Mar. 1965 | Feb. 1965 | Mar. 1965 | Feb. 1965 | Jan. 1965 | Mar. 1964 |
| ALL FISH & SHELLFISH (Fresh, Frozen, & Canned) | | | | | 108.3 | 109.7 | 112.1 | 104.1 |
| Fresh & Frozen Fishery Products: | | | | | 112.5 | 114.5 | 118.3 | 105.5 |
| Drawn, Dressed, or Whole Finfish: | | | | | 110.8 | 115.1 | 121.8 | 100.9 |
| Haddock, lge., offshore, drawn, fresh | Boston | lb. | .11 | .13 | 87.4 | 89.2 | 133.3 | 61.8 |
| Halibut, West., 20/80 lbs., drsd., fresh or froz. | New York | lb. | .40 | .40 | 117.3 | 117.3 | 118.3 | 89.2 |
| Salmon, king, lge. & med., drsd., fresh or froz. | New York | lb. | .83 | .85 | 115.3 | 118.8 | 119.1 | 114.2 |
| Whitefish, L. Superior, drawn, fresh | Chicago | lb. | .83 | .85 | 93.3 | 96.3 | 90.3 | 108.2 |
| Yellow pike, L. Michigan & Huron, rnd., fresh | New York | lb. | .85 | .80 | 139.2 | 131.0 | 122.8 | 114.7 |
| Processed, Fresh (Fish & Shellfish): | | | | | 112.3 | 115.1 | 116.0 | 116.1 |
| Fillets, haddock, smtl., skins on, 20-lb. tins | Boston | lb. | .40 | .44 | 97.1 | 105.6 | 134.8 | 77.7 |
| Shrimp, lge. (26-30 count), headless, fresh | New York | lb. | .95 | .97 | 111.3 | 113.7 | 109.6 | 113.1 |
| Oysters, shucked, standards | Norfolk | gal. | 6.88 | 7.00 | 115.9 | 118.0 | 120.1 | 126.5 |
| Processed, Frozen (Fish & Shellfish): | | | | | 109.3 | 108.6 | 111.8 | 96.2 |
| Fillets; Flounder, skinless, 1-lb. pkg. | Boston | lb. | .38 | .35 | 95.0 | 88.7 | 92.5 | 98.9 |
| Haddock, smtl., skins on, 1-lb. pkg. | Boston | lb. | .39 | .39 | 112.9 | 114.3 | 115.8 | 108.5 |
| Ocean perch, lge., skins on 1-lb. pkg. | Boston | lb. | .31 | .31 | 108.7 | 108.7 | 106.9 | 114.0 |
| Shrimp, lge. (26-30 count), brown, 5-lb. pkg. | Chicago | lb. | .92 | .91 | 108.5 | 107.9 | 112.1 | 87.2 |
| Canned Fishery Products: | | | | | 101.3 | 101.8 | 101.8 | 102.2 |
| Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. | Seattle | cs. | 20.50 | 21.00 | 89.3 | 91.5 | 91.5 | 94.8 |
| Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs. | Los Angeles | cs. | 11.44 | 11.56 | 101.6 | 102.6 | 102.6 | 103.3 |
| Mackerel, jack, Calif., No. 1 tall (16 oz.), 48 cans/cs. | Los Angeles | cs. | 7.13 | 6.25 | 120.9 | 105.9 | 105.9 | 103.9 |
| Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs. | New York | cs. | 10.00 | 10.00 | 128.3 | 128.3 | 128.3 | 118.2 |
| 1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices. | | | | | | | | |

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

in March 1964 due to sharply higher prices this March for ex-vessel haddock and frozen halibut.

Prices for all items in the processed fresh fish and shellfish subgroup dropped from February to March 1965, with the subgroup index down 2.4 percent. The more significant price declines were for fresh small haddock fillets at Boston (down 8.0 percent), followed by lower prices at New York City for fresh South Atlantic shrimp (down 2.1 percent), and a slight drop in prices for shucked standard oysters. As compared with the same month a year earlier, the subgroup index this March was lower by 3.3 percent because of lower prices for fresh shrimp and oysters which were partially offset by much higher prices this March for fresh haddock fillets (up 25 percent from March 1964).

The March 1965 subgroup index for processed frozen fish and shellfish rose only 0.6 percent from the previous month. But prices for frozen flounder fillets were up 7.1 percent in that period and for frozen shrimp at Chicago up 0.6 percent. The subgroup index this

March was 13.6 percent higher than in March 1964 chiefly because of substantially higher prices for frozen shrimp (up 24.4 percent) and frozen haddock fillets (up 4.1 percent).

Lower prices for canned pink salmon and canned tuna in March 1965 were responsible for a 0.5-percent drop from the previous month in the subgroup index for canned fishery products. Lower prices for canned pink salmon were established as a spur to increased sales and to continue the good movement of canners' stocks. Canned tuna prices for advertised brands were unchanged from the previous month, but slightly lower prices for "other packers' labels" caused a 1-percent drop in the average canned tuna price. California canneries paid more for ex-vessel jack mackerel in March and prices for the canned product rose 14.2 percent above the previous month. As compared with the same month a year earlier, prices in March 1965 were higher for canned Maine sardines and jack mackerel. But those higher prices were offset by lower prices for canned pink salmon and canned tuna, and this March the subgroup index was down 0.9 percent from March 1964.





International

FISH MEAL

WORLD PRODUCTION, JANUARY 1965 WITH COMPARISONS:

The high level of fish meal production in Peru was the dominant factor in world fish meal production in December 1964 and January 1965 as output in the United States and several other countries declined seasonally. World output in January 1965 showed a modest decline from the same month in the previous year due to lower production in Chile, South Africa, Norway, Iceland, West Germany, and Denmark.

World fish meal production in 1964 was considerably above that in 1963. The increase was due largely to expanded production in Peru. Higher production in 1964 was also reported in Norway, South Africa, Chile, Iceland, Angola, and Denmark. The increase

was partly offset by lower production in Canada and the United States.

Most of the principal countries producing fish meal submit data to the International Association of Fish Meal Manufacturers monthly (see table).

PRODUCTION AND EXPORTS FOR SELECTED COUNTRIES, 1963-64:

Member countries of the Fish Meal Exporters' Organization (FEO) account for about 90 percent of world exports of fish meal. The FEO countries are Chile, Angola, Iceland, Norway, Peru, and South Africa/South-West Africa.

Table 1 - Exports of Fish Meal by Member Countries
of the FEO, 1963-64

| Country | Oct. | | Nov. | | Dec. | | Jan.-Dec. | |
|---|-------|-------|-------|-------|-------|-------|-----------|---------|
| | 1964 | 1963 | 1964 | 1963 | 1964 | 1963 | 1964 | 1963 |
| (1,000 Metric Tons) | | | | | | | | |
| Chile | 9.3 | 2.8 | 12.4 | 1.21 | 11.6 | 3.8 | 137.6 | 86.8 |
| Angola | 4.8 | 3.6 | 4.2 | 1.8 | 4.0 | 7.0 | 56.0 | 30.0 |
| Iceland | 10.9 | 10.2 | 10.9 | 14.7 | 12.4 | 17.6 | 124.3 | 99.1 |
| Norway | 12.8 | 12.1 | 14.4 | 15.9 | 9.1 | 18.1 | 179.4 | 102.1 |
| Peru | 84.4 | 83.3 | 109.7 | 90.4 | 123.8 | 104.7 | 1,416.5 | 1,159.3 |
| So. Africa (including S.-W. Africa)... | 25.5 | 40.9 | 18.7 | 18.3 | 13.7 | 13.4 | 226.5 | 198.8 |
| Total | 147.7 | 152.9 | 170.3 | 142.3 | 174.6 | 164.6 | 2,140.5 | 1,678.0 |

The FAO countries produced 2.3 million metric tons of fish meal in 1964 or about 70 percent of total world production estimated at 3.3 million tons.

Table 2 - Production of Fish Meal by Member Countries
of the FEO, 1963-64

| Country | Oct. | | Nov. | | Dec. | | Jan.-Dec. | |
|---|-------|-------|-------|-------|-------|-------|-----------|---------|
| | 1964 | 1963 | 1964 | 1963 | 1964 | 1963 | 1964 | 1963 |
| (1,000 Metric Tons) | | | | | | | | |
| Chile | 10.7 | 0.9 | 9.6 | 3.7 | 9.8 | 13.1 | 147.0 | 92.7 |
| Angola | 5.4 | 3.6 | 5.2 | 3.0 | 5.0 | 7.4 | 57.0 | 31.5 |
| Iceland | 13.1 | 0.9 | 3.2 | 0.8 | 9.3 | 8.7 | 127.7 | 87.7 |
| Norway | 15.8 | 7.8 | 13.1 | 12.1 | 10.2 | 9.6 | 185.9 | 132.2 |
| Peru | 130.5 | 76.8 | 181.7 | 116.1 | 181.0 | 139.7 | 1,552.2 | 1,159.2 |
| So. Africa (including S.-W. Africa)... | 16.0 | 17.0 | 9.0 | 3.8 | 1.0 | 1.2 | 257.4 | 238.0 |
| Total | 191.5 | 107.0 | 221.8 | 139.5 | 216.3 | 179.7 | 2,327.9 | 1,741.3 |

1/Estimated.

Note: Because of rounding, some totals do not add.

| World Fish Meal Production by Countries, January 1965, December 1964, and Year 1964 with Comparisons | | | | | | |
|---|---------|---------|---------|-----------|-----------|--|
| Country | Jan. | | Dec. | Jan.-Dec. | | |
| | 1965 | 1964 | 1964 | 1964 | 1963 | |
| (Metric Tons). | | | | | | |
| Canada | 5,441 | 3,405 | 5,621 | 56,215 | 77,436 | |
| Denmark | 5,887 | 8,799 | 5,161 | 109,687 | 100,001 | |
| France | 1,100 | 1,100 | 1,100 | 13,200 | 13,200 | |
| German Fed. Rep. | 4,635 | 6,757 | 5,116 | 73,900 | 73,997 | |
| Netherlands | 1/ | 800 | 1/ | 2/6,700 | 6,800 | |
| Spain | 1/ | 1/ | 1/ | 1/ | 3/21,687 | |
| Sweden | 590 | 1,070 | 622 | 7,600 | 6,636 | |
| United Kingdom | 7,259 | 7,736 | 5,720 | 74,813 | 75,331 | |
| United States | 2,512 | 1,667 | 6,610 | 189,553 | 4/232,133 | |
| Angola | 1/ | 5,548 | 6,985 | 59,701 | 31,829 | |
| Iceland | 4,200 | 5,736 | 9,253 | 127,739 | 87,730 | |
| Norway | 5,894 | 8,607 | 10,172 | 185,901 | 131,546 | |
| Peru | 194,104 | 195,551 | 180,979 | 1,552,214 | 1,159,233 | |
| So. Afr. (incl. S.-W. Afr.) | 8,744 | 14,302 | 1,075 | 4/257,440 | 238,269 | |
| Belgium | 375 | 375 | 375 | 4,500 | 4,500 | |
| Chile | 12,855 | 21,848 | 9,836 | 144,456 | 92,715 | |
| Morocco | 1/ | 270 | 1/ | 5/18,450 | 6/19,000 | |
| Total. | 253,596 | 283,571 | 248,625 | 2,882,069 | 2,372,043 | |

1/ Data not available.

2/ Data available only for Jan.-Oct. 1964.

3/ Data available only for Jan.-Nov. 1963.

4/ Revised.

5/ Data available only for Jan.-Nov. 1964.

6/ Estimated.

Notes: Figures do not report fish meal production to the International Association of Fish Meal Manufacturers at present.

1/Data not available.

2/Data available only for Jan.-Oct. 1964.

3/Data available only for Jan.-Nov. 1963.

4/Revised.

5/Data available only for Jan.-Nov. 1964.

6/Estimated.

Note: Japan does not report fish meal production to the International Association of Fish Meal Manufacturers at present.

International (Contd.):

Total fish meal exports by FEO countries in 1964 totaled 2.1 million tons, an increase of about 28 percent from the previous year. In 1964, Peru accounted for about 66 percent of total fish meal exports reported by FEO countries.

SALMON

JAPAN AND U.S.S.R.
SALMON CATCH IN 1964:

The Japanese Fisheries Agency on February 8, 1965, released Japan's 1964 salmon catch data compiled in preparation for the Ninth Annual Meeting of the Northwest Pacific Fisheries Commission (Japan-U.S.S.R.), which convened March 2. According to the Agency's tabulations, Japan's 1964 salmon catch totaled 105,035 metric tons.



Aboard a Japanese fishing vessel in North Pacific, pulling in a gill net and removing salmon.

| Japan and U.S.S.R. Salmon Catch by Species, 1964 | | | | | | |
|--|--------|--------|--------|--------|-------|---------|
| Fishery | Red | Chum | Pink | Silver | King | Total |
| (Metric Tons) | | | | | | |
| Japan: | | | | | | |
| Mothership fishery | 14,125 | 17,896 | 3,048 | 8,250 | 1,130 | 44,449 |
| Land-based gill-net fishery | 160 | 14,797 | 15,716 | 4,252 | 789 | 35,714 |
| Land-based long-line fishery | 12 | 3,184 | 7,296 | 13 | 54 | 10,559 |
| Japan Sea & Pacific coastal fishery | 6 | 4,870 | 9,293 | 50 | 94 | 14,313 |
| Total, | 14,303 | 40,747 | 35,353 | 12,565 | 2,067 | 105,035 |
| U.S.S.R.: | | | | | | |
| Far Eastern coastal fishery | 2,692 | 27,794 | 14,678 | 1,118 | 1,431 | 47,715 |

1/Includes 9,012 metric tons taken in Area A (north of 45° N. latitude).

The Agency also announced that the 1964 Soviet Far Eastern coastal salmon catch totaled 47,715 metric tons (26 percent below that country's catch target of 65,000 tons), a postwar record low. The Russian salmon catch in 1963 totaled 81,130 metric tons. (Suisan Keizai Shimbun, February 16; Hokkai Suisan, February 15, 1965.)

FOOD AND AGRICULTURE ORGANIZATION

THIRD INTERNATIONAL TECHNICAL
MEETING ON FISHING BOATS:

The needs of developing countries for smaller fishing craft (under 100 gross tons) especially adaptable for fishing their own local waters will be the theme of the Food and Agriculture Organization's (FAO) 3rd International Technical Meeting on Fishing Boats, to be held at Göteborg, Sweden, October 23-29, 1965. The meeting is in conjunction with the 3rd Swedish International Fishery Trade Fair, also to be held at Göteborg, October 29-November 7.

In an interview, Chief of FAO's Fishing Boat Section and technical secretary for the Göteborg meeting said:

"The importance of these smaller craft is simply that they so greatly outnumber the larger boats in the world's fisheries. The small boats pose many interesting and difficult technical problems. They are products of local development, designed both from tradition and from a need to meet local conditions, while making use of local materials. What we hope to accomplish at Göteborg is to come up with ideas and recommendations that will enable us to set better standards for the smaller boats." Naval architects and marine engineers so far have devoted little time to such smaller craft. Yet they have an importance

International (Contd.):

that cannot be overlooked if fishing is to progress in the developing nations, as well as in developed nations, he said.

The prospectus for the Göteborg meeting calls for a review of technical progress in naval architecture and marine engineering. Delegates will review current developments in fishing vessel design and prospects for the future, the social and economic background affecting fishing in the developing nations, the seaworthy aspects and workability of small craft, powering and engineering, as well as a breakdown of design problems covering vessels of 20 gross tons and under, and those of 20 to 100 gross tons. Mechanization of native craft with outboards will also be studied.

The head of FAO's Fishing Boat Section pointed out that since 1947 when the first international meeting on fishing boats was held at Göteborg, FAO has undertaken a number of missions to help developing countries improve the designs of their fishing vessels. Several thousand vessels had been built from FAO designs and, although this was not a great number, a wealth of experience has been gained, much of which would be reviewed during the coming meeting. A number of specialized meetings on fishing-vessel design have been held in various parts of the world, he said. Among the FAO-sponsored meetings were: the 1st FAO Fishing Boat Congress, held in Paris and Miami in 1953; the 2nd Congress in Rome in 1959; the FAO Research Vessel Forum at Tokyo in 1961; the Indo-Pacific Fisheries Council/FAO Symposium on Mechanization of Fishing Craft at Seoul in 1962; and the FAO Fishing Vessel Stability Meeting at Gdańsk, Poland, in 1963. In addition, the 1st and 2nd FAO Fishing Gear Congresses, held at Hamburg in 1947 and London in 1963, dealt with certain aspects of fishing-vessel design.

About 300 participants from some 30 countries are expected to attend the Göteborg meeting. About 35 technical papers will be presented, several of them by FAO experts. (Food and Agriculture Organization, Rome, February 1965.)

Note: See *Commercial Fisheries Review*, Sept. 1964 p. 64, Aug. 1963 p. 67.

ADVISORY COMMITTEE ON
MARINE RESOURCES RESEARCH
MEETS IN ROME:

How to promote a more rational exploitation of the world's ocean resources was discussed by 15 fisheries scientists from 11 nations at the 3rd Session of the Advisory Committee on Marine Resources Research, Food and Agriculture Organization (FAO), held in Rome, March 1-8, 1965. Set up in 1963, the Committee's principal function is to help FAO in establishing a worldwide program of research into the resources of the sea. Another of its functions is to advise on how to improve international cooperation in using the living resources of the sea.

Speaking before the Committee's opening session, Dr. B. R. Sen, FAO's Director-General said that international cooperation was a "must" if the living resources of the sea are to be rationally exploited. He cited the declining Antarctic whale stocks as an example of what can happen in other important fisheries unless the nations agree to a truly international long-term planning of the world sea harvest.

"In the 12 months since this Advisory Committee last met," the Director-General said, "we have seen the International Whaling Commission fail to achieve agreement for the conservation of these severely depleted stocks, with the result that once again they will be overexploited by the powerful whaling fleets of several nations. The case of the Antarctic whales is important to me in its own right, as we see a large food resource being destroyed." Perhaps more important, he said, was that failure to secure rational exploitation in this case might weaken other international efforts aimed at securing wiser management of the world's marine resources.

Some countries are presently attempting to convene an extraordinary meeting of the Whaling Commission to deal with the problem, he added. If such an extraordinary meeting were held and again failed to solve the Antarctic whale problem, FAO was willing, at the request of member governments, to call an emergency meeting of the countries directly concerned, the Director-General said. He also told the Advisory Committee's 15 scientists that he would propose to FAO's next Conference, which is to be held in November 1965, the establishment of a permanent com-

International (Contd.):

mittee on fisheries and a major strengthening of FAO work in fisheries.

One of the proposed committee's principal tasks, he said, would be periodically "to conduct general reviews of fishery problems of an international character and to suggest measures for their solution."

Strengthening of FAO's work in fisheries was necessary, he said, "to cope with the enormously increased demand on FAO resulting from the situation in world fisheries."

"The situation is becoming more and more complex; it requires not only a rational planning for long-term development, but in certain cases emergency action."

Following Dr. Sen's remarks, Roy Jackson, Director of FAO's Division of Fisheries told the meeting that expansion of the organization's work in fisheries was imperative if FAO was to be of maximum use to the fishing nations, particularly the developing ones.

"The problems are still arising faster than we can even begin to consider them, let alone solve them. This is our present situation," he said.

Among the priorities, he said, were the need for more research on stocks and fish population dynamics, studies on the growing pollution of marine waters, strengthening FAO's field program in fisheries, and the launching of the World Program of Marine Resources Research, proposed last year by Dr. Sen.

At the 1965 Session the Committee also reviewed the fisheries aspects of the pollution of marine waters and the work of FAO's various regional fisheries councils and commissions, and advised FAO on its proposed program of work in fisheries research and management for 1966/67.

The 3rd Session of the Committee was preceded by a meeting held February 25-28 of the Committee's working group on direct and more speedy estimation of fish abundance.

The Advisory Committee meets once a year and reports its findings to the FAO Director-General. Its members are from Argentina, Australia, Canada, the Federal Republic of Germany, Ghana, India, Japan, the Nether-

lands, Poland, the United Kingdom, the United States, and the Soviet Union. The scientists are appointed to the Committee by the FAO Director-General on the basis of their expert knowledge, and not as representatives of their governments.

In addition to its FAO role, the Committee acts as the advisory group on the oceanographic aspects of fisheries to the InterGovernmental Oceanographic Commission of the United Nations Educational, Scientific, and Cultural Organization (UNESCO). (Food and Agriculture Organization Rome, February 26 and March 1, 1965.)

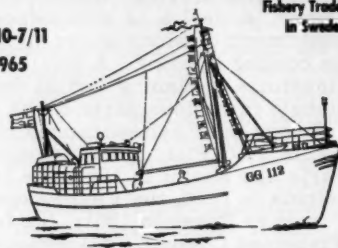
Note: See *Commercial Fisheries Review*, April 1964 p. 42.

FISHERY TRADE FAIR

THIRD SWEDISH INTERNATIONAL FAIR TO BE HELD AT GÖTEBORG:

The 3rd Swedish International Fishery Trade Fair will be held at Göteborg, October 29 to November 7, 1965, in the Swedish Trade Fair's exhibition halls (Svenska Massan).

29/10-7/11
1965



Welcome as exhibitor at



THE FAO WORLD CONGRESS REGARDING QUESTIONS OF FISHING BOATS

International (Contd.):

Products on display at the fair will be:

- (1) Fishing boats, lifeboats, liferafts, wheelhouses;
- (2) Engines, pumps, winches, steering gear, propellers;
- (3) Anchors, chains, fittings, cordage, tarpaulins;
- (4) Telephones, radios, direction-finders, electrical equipment;
- (5) Trawls, drift nets, and similar equipment;
- (6) Oilskins, boots, vests, gloves;
- (7) Freezing and refrigerating machines, gutting and cutting machines;
- (8) Conveyors, loading tables, packing machines, forklift trucks, scales;
- (9) Fuel and lubricants, paints and varnishes.

The 1st and 2nd Swedish International Fishery Trade Fairs were held at the same place and premises in 1961 and 1963, respectively.

The Food and Agriculture Organization (FAO) of the United Nations will, in conjunction with the Fair, hold a conference on fishing craft problems. About 300 representatives from 30 countries are expected to participate in the FAO conference, which is scheduled for October 23-29, 1965. Similar conferences have previously been held in Paris in 1953, and in Rome in 1959. (United States Consulate, Goteborg, February 18, 1965.)

NORTHWEST PACIFIC FISHERIES COMMISSION

JAPANESE AND SOVIET PRECONFERENCE VIEWS ON SALMON AND CRAB NEGOTIATIONS:

The U.S.S.R. is alarmed at the decline of the salmon catch in the northwest Pacific. That was a major point of a Soviet fishery negotiator who outlined Soviet views for the Japanese newspaper *Hokkaido Shimbun* prior to the opening on March 1, 1965, of the ninth annual meeting of the Northwest Pacific Fish-

eries Commission. (The Commission sets salmon and king crab catch quotas in western Pacific waters covered under a Japanese-Soviet treaty. Treaty waters north of 45° N. latitude are designated Area A; those south of 45° N. latitude are designated Area B.)



A catch of salmon aboard a Japanese high-seas mothership operating in the North Pacific Ocean during the salmon season.

Discussing salmon fishing, the Soviet negotiator in his article in the Japanese newspaper painted a pessimistic picture of the continuing decline of salmon resources: the combined Japanese and Soviet catch in Northwest Pacific Treaty waters in 1964 (about 155,000 metric tons) was less than half that of 8 to 10 years ago; the spawning migration of salmon was "insignificant;" and finally, the pink salmon catch in treaty waters (55,000 tons in 1964) was less than a quarter of that of a decade ago. This he found "alarming."

| Soviet Salmon Catch in the Northwest Pacific, 1962-1964 | | | |
|---|---------------|----------|----------|
| Species | Year | | |
| | 1964 | 1963 | 1962 |
| | (Metric Tons) | | |
| Red salmon . . . | 2,692.1 | 3,442.0 | 4,649.0 |
| Chum salmon . . | 27,794.6 | 33,565.7 | 33,992.0 |
| Pink salmon . . . | 14,678.8 | 35,766.7 | 16,284.0 |
| Silver salmon . . | 1,118.3 | 7,353.1 | 4,680.0 |
| King salmon . . | 1,431.3 | 1,003.3 | 960.0 |
| Total . . . | 47,715.1 | 81,130.8 | 60,565.0 |

Referring specifically to salmon fishing in the B-area, the Soviet negotiator cited his belief that the catch was small and costly, and the salmon runs declining steadily. Thus one task of the fisheries talks will be "to prevent the danger of extermination of salmon resources."

International (Contd.):

The Soviet negotiator also said that the regulation of crab fishing on the Asian Continental Shelf and the proper control of her-ring fishing in the Hokkaido-Sakhalin area were "pressing problems." (United States Consul, Sapporo, Japan, February 25, 1965.)

Japanese preconference views on the negotiations were summarized in the Japanese periodical *Tokyo Shimbun*, January 19, 1965. The main points were as follows:

The Japanese Government, with industry support, will insist on a Japanese salmon catch quota in 1965 for Areas A and B combined of 120,000 metric tons (the same as in 1963, but up 10,000 tons from 1964). In support of their position the Japanese cite the theory of alternating lean and good salmon seasons which indicates 1965 will be a good year. (United States Embassy, Tokyo, January 25, 1965.)

Note: See *Commercial Fisheries Review*, April 1965 p. 72; July 1964 p. 42; June 1964 p. 60.

NORTH PACIFIC FUR SEAL COMMISSION

8TH ANNUAL MEETING CONVENES IN TOKYO:

The 8th annual meeting of the North Pacific Fur Seal Commission was held in Tokyo, February 22-26, 1965, with the four governments which are Parties to the Interim Convention on Conservation of North Pacific Fur Seals participating. The Convention entered into force in 1957 on ratification by Canada, Japan, the Soviet Union, and the United States. It was the first meeting held by the Commission since the Convention was amended by a Protocol which was ratified by the four governments in 1964.

At the meeting the Commission reviewed and approved the research and management work done in 1964 on the fur-seal herds of the Commander, Robben, and Pribilof Islands. The seal herds of Robben Island and the Commander Islands continue to show a favorable increase in numbers. The herd on the Pribilof Islands is considered to be nearing optimum size, but uncertainties regarding that conclusion still remain. No further reduction of the female component of the Pribilof herd is planned, but a kill of females limited to the estimated annual surplus will be continued. Efforts are being directed toward refinement of seal population research. The

commercial harvest of seals in 1964 was 18,873 from Robben Island and the Commander Islands and 65,432 from the Pribilof Islands. This compares with 14,656 and 86,246, respectively, taken in 1963.

During 1964, Japanese and Canadian scientists visited the Pribilof Islands to observe and participate in the research work being carried out in the United States.

The Commission has as its major responsibility investigation of the fur seal populations of the North Pacific Ocean and determination of the measures which will make possible the maximum sustained yield from that resource. (Fisheries Attache, United States Embassy, Tokyo, February 19, 1965.)

The Commission is composed of representatives from the member countries. They are William M. Sprules, Special Assistant to the Deputy Minister of Fisheries of Canada; Tomoyoshi Kamenaga, Chief, Production Division, Fisheries Agency of Japan; A. S. Babaev, Chief Specialist, State Committee on Fisheries, U.S.S.R.; and Ralph C. Baker, Assistant Director for Resource Development, U. S. Bureau of Commercial Fisheries, United States. Kamenaga as Chairman of the Commission presided at the meetings. The Commission meeting was preceded by a meeting of the Commission's Standing Scientific Committee which began February 15.

The Soviet Commissioner was elected Chairman of the Commission and the United States Commissioner was elected Vice Chairman. The term of the newly elected officers will extend through the next annual meeting which will be held in Ottawa, Canada, beginning February 21, 1966. The Standing Scientific Committee will meet one week earlier to consider the results of the preceding year's investigations and to prepare its report for the Commission.

Note: See *Commercial Fisheries Review*, April 1964 p. 48.

GENERAL AGREEMENT ON TARIFFS AND TRADE (GATT)

TWENTY-SECOND SESSION MEETS IN GENEVA:

Further reduction of import restrictions was an important item on the agenda of the 22nd Session of the Contracting Parties to the GATT scheduled to meet in Geneva, March 2-26, 1965. The agenda also called for a discussion of trade expansion in the less developed countries.

International (Contd.):

Two countries, Malta and Malawi, have adhered to the GATT since the 21st Session, bringing the total number of contracting parties to 64.

The GATT is the principal international forum in which trade policy problems are discussed and resolved among the world's trading nations. The GATT, whose members are responsible for over 80 percent of world trade, is the multilateral trade agreement which replaced the old bilateral trading system existing prior to World War II. The Kennedy Round negotiations for the lowering of trade barriers is also taking place within the framework of the GATT. (U. S. Department of State, March 1, 1965.)

Note: See Commercial Fisheries Review, May 1964 p. 41.

LAW OF THE SEA

CERTAIN INTERNATIONAL CONVENTIONS RATIFIED BY ITALY AND NEW ZEALAND:

On January 18, 1965, New Zealand deposited its ratification of the Convention on the Continental Shelf. The Convention entered into force June 10, 1964.

On December 17, 1964, Italy deposited its accession to the Convention on the Territorial Sea and the Contiguous Zone, and the Convention on the High Seas. Those Conventions entered into force September 10, 1964, and September 30, 1962, respectively.

The Conventions ratified by New Zealand and Italy were formulated at the United Nations Conference on the Law of the Sea at Geneva on April 29, 1958. (Department of State Bulletin, February 22, 1965.)

Note: See Commercial Fisheries Review, Mar. 1965 p. 83; Jan. 1965 p. 59; Dec. 1964 p. 39; Nov. 1964 p. 70; Oct. 1964 p. 49.

UNESCO INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

IOC ESTABLISHES WORKING GROUP ON MUTUAL ASSISTANCE:

The Intergovernmental Oceanographic Commission (IOC) of UNESCO at its Third Session, which met June 1964 in Paris, passed a resolution recognizing the urgent necessity for mutual assistance between its Member States in developing their national programs in order to study the oceans as a whole more thoroughly. (IOC programs are carried out

through cooperative action by Member States rather than by centralized action.)

At the June 1964 meeting, IOC decided to establish a Working Group on Mutual Assistance to carry out the following tasks, among others: (1) Encourage sister-relationships between universities and government agencies in advanced countries on the one hand and developing countries on the other. (2) Obtain and arrange to report information on the availability of reliable, easily operated, and relatively inexpensive oceanographic instruments; also report on standard methods and procedures. (3) Study and advise on curricula and methods for educating marine scientists and technicians. (4) Help Member States to obtain needed financial and technical assistance for development of marine sciences. (5) Arrange for places on research vessels for the training of marine scientists and technicians of developing countries. (6) Encourage regional collaboration between institutions working in neighboring areas. (Pacific Science Association Information Bulletin, Vol. 16, No. 6, December 1964.)

Note: See Commercial Fisheries Review, July 1964 p. 44.

UNITED NATIONS SPECIAL FUND

DEVELOPMENT PROJECTS TO AID FISHERIES IN ARGENTINA, GHANA, PAKISTAN, CENTRAL AMERICA, AND EAST AFRICA:

The Governing Council of the United Nations Special Fund held its Thirteenth Session in New York City, January 11-18, 1965, and approved five new fishery development projects. The Food and Agriculture Organization will serve as the executing agency for the projects.

The projects may offer an opportunity to United States firms to compete internationally in providing consultative services, or equipment and materials.

Following are summaries of the five fishery development projects approved:

Argentina (SF/R. 10/Addendum 2): Fishery development project: Fund allocation \$1,509,400; recipient government counterpart contribution \$1,572,000; duration 5 years.

Argentina's fisheries landings of a little over 100,000 metric tons a year are thought to be only a fraction of the country's marine potential.

The immediate objectives of the Special Fund project in Argentina are to: (1) conduct an extensive exploratory fishing survey; and (2) provide advisory services to help

International (Contd.):

the Argentine Government and industry overcome institutional and other problems which have been hampering fisheries development.

Purse-seine fishing for anchovy, mackerel, and other pelagic species will be emphasized at the start of exploratory work. The introduction of purse seines may provide an immediate solution to the raw material shortage at Argentine fish meal plants and canneries. Other resources that may be studied by exploratory fishing are shrimp, bottomfish, squid, and octopus. Echo-sounding surveys with vertical and horizontal sonic equipment will be made during exploratory fishing.

For this project, the Special Fund will provide an exploratory fishing vessel equipped with fishing gear; additional research equipment; and an international expert team consisting of two biologists, one or two master fishermen, an economist, and a Project Manager who will be a fisheries industry expert with considerable background in technology. Additional consultative services will be made available to cope with special problems in different fields. Several fellowships for Argentine students will also be provided.

The Argentine Government will provide an exploratory fishing vessel, additional research and support personnel, and maintenance expenses for the project.

Ghana (SF/R.10/Addendum 17): Fishery research unit; Special Fund allocation \$1,413,600; counterpart contribution \$850,000; duration 5 years.

The Special Fund project in Ghana will assist in the development of fisheries through the establishment and operation of a marine research unit. The unit, which will be operated initially by an international team of experts in cooperation with specialists from Ghana, will be concerned mainly with practical problems of application. Emphasis will be on the biological and technological studies required for efficient exploitation of such resources as tropical sardines, horse mackerel, tuna, and some bottomfish species. Oceanographic work of the unit will be limited to relatively simple measurements having direct bearing on the availability, abundance, and distribution of exploitable fish stocks.

In view of the need to study tropical sardines and other resources on a regional basis, consideration will be given during the course of the Ghana project to setting up a regional scheme involving other West African countries.

For the implementation of the Ghana project, the Special Fund will provide laboratory equipment, fishing gear, and other equipment; several student fellowships; and a team of international experts consisting of a Project Manager, several biologists, an oceanographer, two fishing experts, and an economist experienced in practical fishery problems. In addition, consultative services will be made available to cope with special problems.

The Government of Ghana will contribute a professional counterpart staff and clerical services; land and buildings; an experimental fishing vessel; maintenance of the vessel; and miscellaneous services and facilities.

After termination of Special Fund assistance, the Government of Ghana will assume full responsibility to operate the research unit and participate in a regional fishery scheme that might be developed by that time.

Pakistan (SF/R.10/Addendum 40): Survey for the development of fisheries in East Pakistan; Special Fund allocation \$1,505,800; counterpart contribution \$1,145,000; duration 5 years.

The aims of the Pakistan project are to: (1) carry out exploratory fishing trials and biological studies; (2) develop a core of skilled Pakistan fishermen; (3) examine current Pakistan practices of marketing and distribution, and initiate experiments for their improvement; and (4) develop an efficient system of recording fisheries statistics.



Fig. 1 - East Pakistan stake-net fishing during the winter season in the Bay of Bengal.

Trial fishing will take place mainly in the Bay of Bengal and the lower reaches of the main river systems. Two vessels will be used and a number of different fishing techniques will be tried, including trawling, purse-seining, gill-netting, and long-lining. If the potential of the salt-water fisheries turns out to be limited, the project will concentrate upon the problems of Pakistan's fresh-water fisheries.

For the implementation of this project, the Special Fund will provide an exploratory fishing vessel; fishing gear and other equipment; some land vehicles; and an international team of experts consisting of a Project Manager, two fishery biologists (one of them experienced in hydrography), two master fishermen, a gear technologist, one marketing expert, one statistician, and consultants on special problems. A limited number of fellowships will be given to selected Pakistan members of the counterpart staff to provide training abroad in highly technical fields.

The Pakistan Government will contribute a counterpart staff, an exploratory fishing vessel with crew, shore facilities, some equipment, and all operating and maintenance expenses.

Central America Regional (SF/R.10/Addendum 65): Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua; Fishery development project; Special Fund allocation \$1,828,900; counterpart contribution, equivalent of: \$2,170,000; duration 6 years.

International (Contd.):

Fisheries in Central America are concerned mainly with the shrimp and spiny lobster export industry; there are no important fisheries in the region supplying the domestic market. The underdeveloped state of the fisheries is mostly due to lack of experienced fishery administrations in most of the countries concerned, insufficient knowledge of available resources and methods of exploiting them, and lack of modern marketing systems.

The Special Fund fishery development project in Central America will aim at increasing the production and consumption of fish and fishery products on a regional basis. There will be four main fields of activity: (1) strengthening of fishery administrations; (2) development and management of various fisheries; (3) improvement of processing and marketing; and (4) a general resource survey.

An offshore fishing survey will be carried out with a chartered vessel. Fishing survey operations will be mainly in Pacific waters, with particular emphasis on deep-water shrimp stocks and finfish resources on the Continental Shelf. (Pertinent information from the fishing surveys of the Caribbean Fishery Development Project, which is a separate regional scheme supported by the Special Fund, will be made available to the Central American project.)

For the implementation of this project, the Special Fund will provide three medium-to-small vessels and fishing gear; a chartered vessel for an offshore survey; land vehicles and other equipment; several student fellowships; an international team of experts; consultant services; and subcontracts for highly specialized studies.

The contribution of the Central American Governments will include counterpart staff and crew; maintenance expenses; and miscellaneous services and facilities.

Regional--East Africa (SF/R.10/Addendum 69)--Kenya, Uganda, and the United Republic of Tanzania: Lake Victoria fisheries research; Special Fund allocation \$763,400; counterpart contribution, equivalent of \$580,000; duration 5 years.

The purpose of this Special Fund project is to assist in the development and management of fresh-water fisheries in East Africa through biological investigations and economic surveys. The project is aimed at expanding the activities of the East African Fresh-water Fisheries Research Organization, which has carried out biological research on Lake Victoria and in other areas since 1947. The Organization is jointly supported by the Governments of Kenya, Uganda, and the United Republic of Tanzania.

Exploratory fishing and biological research under the Special Fund project will be concentrated on Lake Victoria. Economic surveys and marketing studies may be spread over a broader area.

To help carry out the project, the Special Fund will recruit a team of international experts, including a biologist, a hydrobiologist, a statistician, a master fisherman, and an economist. The Special Fund will also provide a fully equipped research vessel, some field

and laboratory equipment, and several fellowships for African students.

The East African Governments involved will contribute a counterpart staff, laboratory and shore facilities, and a small fishing vessel. After conclusion of Special Fund support, the African Governments will assume full responsibility for continuing the research programs with their local staff.

It is expected that the results of the studies during and after the period of Special Fund support will speed up investment in the fresh-water fisheries of the region, and make an early contribution towards economic growth in East Africa.



Fig. 2 - In Lake Victoria, Kenya, a floating screen of papyrus rushes (about 200 feet long) is poled out into the lake a short distance from shore. Two ends are drawn together forming a trap out of which surface fish cannot escape.

More detailed summaries of the above projects may be obtained from Trade Opportunities Staff, BDSA-6192, Room 4203, U. S. Department of Commerce, Washington, D.C. 20230. Telephone WO 7-4674 (Area Code 202). Inquiries should contain the project number for the "Summary" desired.

Note: See *Commercial Fisheries Review*, January 1965 p. 60.

SOCIALIST COUNTRIES FISHING VESSEL CONGRESS

HELD AT LENINGRAD:

The 2nd Socialist Countries Fishing Vessel Congress held at Leningrad, Nov. 17-24, 1964, was attended by more than 300 persons from the U.S.S.R., Poland, East Germany, Rumania, Bulgaria, and Hungary. About 220 participants were from the Soviet Union and 36 from Poland. There were no observers or guests. The first Congress was held at Leningrad in 1956; the third is expected to be held before 1969.

Some 59 papers and other communications were discussed at the Conference which was organized in three sections: (1) Fishing techniques and economics, covering the entire field of fishing vessel operations; (2) General operational problems, including unloading at sea, fish processing at sea, etc.; (3) Technical mat-

International (Contd.):

ters, including construction of vessels, engines, etc., application of computers to construction, noise prevention, etc.

Considerable discussion was focused on the desirability of developing single vessels or fleet operations. All agreed fleet operation was necessary in distant waters where shore bases were unavailable. But there was no answer to whether single vessels or fleets were more economical. Fleets were deemed best from the technical standpoint and with regard to quality of fishery products. In the economic considerations there must be included the loss of vessels while unloading at sea and the difficulties encountered when many vessels are fishing in the same area. Unloading at sea has not been solved satisfactorily. There was general discussion on motherships carrying fishing craft on board. That approach is needed for fishing distant waters lacking shore bases. Poland plans to build one or more vessels of that type.

No binding decisions were reached at the Congress. A final protocol was signed but each country was left to draw its own conclusions from the papers presented and the discussions. The protocol covered modern ocean-fishing fleet developments with regard to vessel engines, machine rooms, mechanical processing of fish on board, facilities for locating fish and control of fishing equipment, noise prevention, static balance of vessels, use of computers, exchange of information by Socialist countries. The third Congress to be held prior to 1969 was also covered in the protocol.

The Soviet Union agreed to publish the Conference papers and a summary of the discussions held.



Australia

SPINY LOBSTERS TOO HIGH-PRICED FOR SYDNEY RESTAURANTS:

Lobsters (spiny) were omitted from the menu of most restaurants and night clubs in Sydney, Australia, during the latter part of 1964 because they were too high-priced. According to the president of the Master Fish Merchants Association, it was impossible to sell lobsters even at a small profit to cover

expenses without being accused by customers of "robbing the public."

Night clubs shared part of the blame for prices termed fantastic that were paid for lobsters at the local market auctions. Low-cost meals for club members were said to be subsidized with profits made from gambling machines, and as a result night clubs did not care what they paid for lobsters which was considered unfair competition to other businesses.

The financial position of many retail fish stores in Sydney was described as critical because of the scarcity of fresh fish and the high prices for shrimp and lobsters which made it difficult for some stores to meet overhead expenses. (Australian Fish Trades Review, January 1965.)

WHALE OIL OUTPUT, 1964:

Australia's output of sperm whale oil in 1964 rose to an estimated 5,160 short tons from 4,551 tons in 1963, even though the number of operating land stations had been reduced from 2 to 1.

Operations in 1964 were restricted to the catching of sperm whales. In 1963, there had been some humpback whaling in Western Australia; however, results were poor with only about 717 tons of oil produced. (Foreign Agriculture, March 29, 1965, U. S. Department of Agriculture.)

Australian whaling operations have declined drastically since the 1959/60 season when over 16,000 tons of whale oil were produced. The decline is due in large part to the scarcity of humpback whales which were once abundant off Australia during their annual migration from the Antarctic to warmer waters for breeding.

By the end of 1962 all whaling stations on the Australian East Coast had closed. The West Coast whaling station at Carnarvon closed in August 1963. That left only the West Coast station at Albany open in 1964.

Note: See Commercial Fisheries Review, Nov. 1963 p. 56 and Aug. 1963 p. 81.



Canada

FISHERIES TRENDS, 1963-64:

Canadian sea fisheries landings (includes Newfoundland and excludes seaweeds) during 1964 totaled 2,221.4 million pounds (valued at C\$132.7 million) as compared with 2,198.4 million pounds (valued at C\$117.1 million) during the same period in 1963, an increase of 1.0 percent in quantity and 13.4 percent in value, according to the December 1964 Monthly Review of Canadian Fisheries Statistics.



Fig. 1 - Off the British Columbia coast, a Canadian purse-seiner is drawing the net tighter around a good catch of herring.



Fig. 2 - Filletting cod at a fish plant in St. John's, Newfoundland.

The landings and ex-vessel values of the principal species were:

| Species | Landings | | Value | |
|------------------------|------------------|----------|-------------------|---------|
| | Jan.-Dec. 1964 | 1963 | Jan.-Dec. 1964 | 1963 |
| | . (1,000 Lbs.) . | | .. (1,000 C\$) .. | |
| Atlantic Coast: | | | | |
| Cod | 568,756 | 609,547 | 20,680 | 20,993 |
| Haddock | 106,346 | 90,984 | 6,224 | 4,918 |
| Pollock | 56,947 | 56,581 | 1,831 | 1,716 |
| Herring | 309,982 | 252,683 | 3,306 | 3,087 |
| Swordfish | 11,683 | 14,465 | 3,494 | 2,974 |
| Lobsters | 41,842 | 44,375 | 24,218 | 21,281 |
| Scallops | 16,683 | 16,219 | 7,273 | 6,255 |
| Pacific Coast: | | | | |
| Halibut | 1/35,755 | 2/37,275 | 1/8,840 | 2/8,249 |
| Herring | 503,501 | 572,579 | 6,146 | 6,481 |
| Salmon | 118,593 | 119,339 | 28,841 | 22,758 |

1/Including 8,168,000 pounds (C\$2,039,000) landed in U.S.
2/Including 11,941,000 pounds (C\$2,528,000) landed in U.S.

VESSEL INSURANCE UNDER FISHERMEN'S INDEMNITY PLAN:

The Canadian Federal Government has raised the upper limit on vessels which may be insured under the Fishermen's Indemnity Plan to \$15,000. Previously the limit covered only vessels costing up to \$12,500. There is no change in the lower limit of \$250.

Under the Plan, in the event of total loss, insured fishermen are paid an indemnity of 60 percent of the value in the Atlantic provinces and 70 percent in British Columbia. In the event of partial loss, indemnity against the cost of repairing the vessel in excess of 30 percent of the appraised value is paid in Newfoundland, Nova Scotia, and Quebec; 20 percent is paid in New Brunswick and Prince Edward Island, and in excess of 15 percent of the appraised value on the Pacific Coast. (Bulletin of Fisheries Council of Canada, February 1965.)

FISHING VESSEL SUBSIDY INCREASE EMPHASIZES IMPORTANCE OF PACIFIC TRAWLING:

The Canadian Federal subsidy for steel trawlers of over 100 gross tons operating out of Pacific and inland ports was increased from 35 to 50 percent on April 1, 1965. (The 50-percent subsidy rate was already in effect for such steel vessels on the Atlantic Coast.) At the same time the Canadian Federal subsidy for wooden fishing vessels of over 100 gross tons was increased from 35 to 40 percent in all areas.

The Canadian Minister of Fisheries pointed out that the increased emphasis on steel trawlers operating out of Pacific ports arises from the extension of fishing off that coast to more distant waters. The subsidy increase is designed to encourage Canadian fishermen to trawl for the extensive groundfish resources off the Pacific Coast. Heavy catches of cod and other species have been made in those waters by Russian and Japanese fishermen in recent years, the Minister said.

A change in the administration of the Canadian fishing vessel subsidy program also was effective April 1, 1965. The assistance program for wooden fishing vessels of over 100 tons was transferred from the Canadian Department of Transport to the Department of Fisheries. The assistance program for steel trawlers over 100 tons will continue to be handled by the Canadian Maritime Commis-

Canada (Contd.):

sion, Department of Transport. (Canadian Department of Fisheries, Ottawa, March 4, 1965.)

**GOVERNMENT SPONSORS
NEW COMMUNITY FISH PROCESSING
CENTERS IN NEWFOUNDLAND:**

A Canadian program in excess of C\$500,000 to help the Province of Newfoundland provide additional community processing and storage centers for salt fish and collection depots for fresh fish was announced jointly March 8, 1965, by the Federal Fisheries Minister and the Newfoundland Minister of Fisheries. Plans for the new facilities are part of a Federal-Provincial program to accelerate fisheries development in Newfoundland and Labrador.

New community salt fish centers for Newfoundland are to be built at Foxtrap, Conception Bay; Mount Arlington Heights, Placentia Bay; Thornlea and Dildo in Trinity Bay; and Upper Jenkins Cove, Twillingate. The fresh fish collection depots are planned for Plate Cove East, Bonavista Bay; Chance Cove, Trinity Bay; Sagona, Hermitage Bay; Lamine East on the Burin Peninsula; and Seal Cove, Connaigre Bay. In addition to those new facilities, plans are being made to enlarge the salt fish center at L'Anse au Loup in Labrador.

These community facilities are expected to be completed in 1965. The cost of the buildings, including related marine works, will be borne by the Canadian Federal Government, with the Province undertaking responsibility for making building sites available and assuring normal maintenance and operation. (Canadian Department of Fisheries, Ottawa, March 8, 1965.)

**GOVERNMENT RELOCATION PROGRAM
FOR NEWFOUNDLAND FISHERMEN:**

A Canadian Federal-provincial government program to encourage the relocation of from 4,000 to 5,000 households in many small Newfoundland fishing settlements to more suitable communities within the province was announced jointly in March 1965 by Canada's Federal Government Fisheries Minister and the Minister of Fisheries of Newfoundland.

The program is a long-term plan for the centralization of fishermen in Newfoundland and will affect only those isolated communities in which at least 90 percent of the households agree to move. It will provide for payment of a grant of C\$1,000 to each household, plus \$200 for each member of the household, as well as actual travel and removal expenses for the household and their effects to a designated growth point within the province. The major share of the cost will be borne by the Federal government. The offer of assistance is to be in force for 5 years starting April 1, 1965.

The program is to be carried out gradually, with assistance to the households involved expected to average about \$2,400. The total program will cost several million dollars. A large number of isolated settlements are expected to be abandoned through the resettlement plan during the next 5 years.

While the object of the program is to centralize fishermen, the terms of the plan will apply to all households in a settlement regardless of occupation. Payment of removal expenses and grants to nonfishing households, and fishing households not wanting to continue in fishing, would be for relocation in any approved locations within the province. Those wishing to continue in fishing as an occupation would be eligible only when moving to approved fishing settlements where employment opportunities are offered either afloat or ashore.

For some years past the Government of Newfoundland has provided financial assistance of up to \$600 per household to encourage fishermen to move to more suitable locations within the province, where agreement to move has been reached by all members of the community. Under the program some 90 settlements have been abandoned, while gradual unassisted abandonment of some 60 additional settlements has also taken place. After abandonment of a settlement, the land is to revert to the Crown to prevent year-round resettlement, although seasonal fishing or other operations can be carried out, but with no additional public facilities.

Field administration of the new program is to be the responsibility of the Provincial government. A standing committee with representation from both governments will be appointed to give general supervision to implementation of the program. A study is to be

Canada (Contd.):

made to establish the immediate and long-term absorptive capacity of selected "growth points" and the probable costs of extending existing facilities to meet the needs of a significant increase in population.

The decision of the two governments (Federal and provincial) to speed up the resettlement plan is considered basic to the successful development of the Newfoundland fisheries, and followed submission of a report made by senior Federal and provincial officials who earlier met in St. John's. They included representatives of the Department of Fisheries of Canada, Treasury Board, the federal Departments of Public Works and Labour, the Atlantic Development Board and ARDA. Newfoundland representatives were from the provincial Departments of Fisheries, Public Works, Highways, Municipal Affairs, and Welfare and Economic Development.

The plan stemmed from the realization by both Federal and provincial governments that opportunities for improvement of income and living standards of fishermen would continue to be limited so long as fishermen remained dispersed in several hundred small fishing settlements. Many of those settlements have as few as 10 or 15 households, the fishermen use small boats and are dependent on fish coming close to shore, as well as being handicapped by short fishing seasons, local curing of fish with salt, and restricted market opportunities. (Department of Fisheries, Ottawa, March 5, 1965.)

DECLINING HARP SEAL HERDS PROTECTED BY ST. LAWRENCE CATCH QUOTA IN 1965:

Harp seal hunters were subject to a Canadian catch quota in the Gulf of St. Lawrence in 1965 for the first time. A catch quota of 50,000 was placed on young seals in District 2, the Gulf's main sealing area, and the killing of old seals in breeding patches was prohibited. The action was based on scientific evidence accumulated over the last 10 to 15 years which indicated that the harp seal herds in the Gulf of St. Lawrence were being reduced by an excessive harvest.

To enforce the quota and other sealing regulations, the Canadian Department of Fisheries stationed fishery officers aboard each

vessel at the hunt as well as at the drop points where planes landed the seal pelts taken. A government helicopter patrolled the seal whelping grounds near Prince Edward Island, the center of sealing operations this year.

The sealing season in the Gulf opened on March 8, 1965, and a strict watch was kept on daily operations. With favorable weather prevailing, it became apparent that the 50,000 quota would be taken very quickly, so the season for taking young seals was closed March 11, 1965.

Canadian Fisheries Department officials in the Maritime Provinces who supervised and carried out the protection program in the Gulf said they considered the operation to have been effective. They were pleased also with the cooperation received from the masters of sealing ships and from aircraft operators who engaged in the hunt.

An overall check on March 12 showed all seal catching operations in the Gulf of St. Lawrence had ended.

Some of the sealine ship masters continued sealing operations in international waters on the "Front," the North Atlantic area off Labrador and the east coast Newfoundland. In that area, the Canadian Department of Fisheries, through its Newfoundland Area headquarters, surveyed the seal fishery with air patrols and also by stationing observers aboard sealing vessels. (Canadian Department of Fisheries, Ottawa, March 16, 1965.)

Seal hunting in the North Atlantic waters of the "Front" is an international operation. The problem of pursuing additional seal conservation measures in that area has been brought before the International Northwest Atlantic Fisheries Commission, which is concerned with the investigation and conservation of the major fisheries in the Northwest Atlantic. Canada hopes that harp and hood seals can be brought within the responsibility of the Commission by a protocol amendment to the Convention under which the Commission operates. A number of countries have already ratified the protocol amendment on harp and hood seals.

Note: See Commercial Fisheries Review, March 1964 p. 45.

SEALING OPERATIONS IN GULF OF ST. LAWRENCE, 1965:

Invitations were extended by Canada's Fisheries Minister to representatives of three hu-

Canada (Contd.):

mane and conservation societies to view the sealing operations and observe the effectiveness of the new seal protection regulations in the Gulf of St. Lawrence during the week of March 15, 1965. The Ontario Humane Society Canadian Society for the Prevention of Cruelty to Animals, and Canadian Audubon Society sent representatives. Sealing in the Gulf of St. Lawrence area opened on March 8, and on the Front on March 12.

Following serious consideration given to the whole matter of sealing on the Atlantic Coast, the Canadian Fisheries Minister in fall 1964 instituted more restrictive regulations which were to become effective with this year's operations.

In the opinion of experts the method presently used for killing seals, when properly executed, does not subject the animals to undue pain.

In recent years, helicopters have been used in sealing operations. This year, as last, it is unlawful to use a helicopter or other aircraft for sealing except under an aircraft sealing license issued by the Minister. The main commercial sealing operations take place on the Front area, which includes all the waters of the Strait of Belle Isle and the Atlantic Ocean east of a straight line between Amour Point on the coast of Labrador and Flowers Cove, Newfoundland, and in the Gulf area, which includes all the waters and territories west of a straight line between Amour Point on the coast of Labrador and Flowers Cove, Newfoundland.

The Gulf area itself is further divided, for regulation purposes, into three districts. In District 2 of the Gulf an annual quota has been set of 50,000 seals. That district includes all the waters and territories south of 50° N. latitude and west of a line from Cape Ray to Cape North. In District 2, helicopters and other aircraft can be used in sealing under a sealing license issued by the Minister. In the other two Gulf districts, and on the Front area, helicopters and other aircraft may be used from land bases for spotting only. (Canadian Department of Fisheries, Ottawa, February 22, 1965.)

* * * * *

LARGE STERN TRAWLER FOR NOVA SCOTIA FIRM:



Fig. 1 - The Acadia Albatross, one of Canada's newest and most modern stern trawlers, is an all-welded steel vessel strengthened for navigation in ice. Main specifications are: length overall 152 feet, breadth molded 33 feet, and gross tonnage about 625 tons. The vessel was launched in Lauzon, Quebec, November 23, 1964, for a Nova Scotia fisheries firm.



Fig. 2 - The Captain of the Acadia Albatross in the vessel's wheelhouse. In front of the Captain is an instrument console which includes radar, loran, echo-sounders, and radiotelephone. Propulsion is to be marine diesel engine and controllable pitch propeller controlled directly from the wheelhouse.

Note: See Commercial Fisheries Review, March 1965 p. 70.



Ceylon

SCOTTISH GROUP TO HELP DEVELOP FISHERIES:

A group of 100 Scottish firms associated with Scotland's fishing industry has signed a preliminary agreement with the new Fisheries Corporation of Ceylon to provide it with about £30 million (US\$84 million) over 10 years to develop Ceylon's fisheries. The Scottish group will also provide technical equipment and expert guidance, and will help to train the local staff in Ceylon.

The Ceylon corporation, which was established in October 1964, hopes to spend about £115 million (US\$322 million) on fisheries development through similar negotiations with other foreign groups and with its own resources of about £30 million. A French combine is also interested in the project.

Ceylon is about the same size as Ireland in area, has about twice the population, and imports £4 million (US\$11.2 million) worth of fishery products annually. Up to a few years ago, before restrictions were placed on imports, the value was twice that amount.

The preliminary agreement was signed earlier this year by the Ceylon corporation chairman, and by a British Treasury official and representative of the group in Scotland. A final agreement was being prepared for signature sometime in spring 1965. (*The Irish Skipper*, Dublin, No. 12, January 1965.)



Chile

FISH MEAL INDUSTRY HURT BY ANCHOVETA SHORTAGE:

Anchoveta, the industrial fish of Chile, remained beyond the range of the Chilean purse-seine fleet for most of the last half of 1964. (Chilean purse-seiners have a limited range. The vessels work close to shore off northern Chile where the Continental Shelf is narrow. Also, since the vessels do not usually carry ice, they must deliver anchoveta shortly after they are caught.)

In June 1963 anchoveta practically disappeared from the northern coast of Chile and did not return until December 1963.

In 1964 anchoveta were caught through the off-season months of June, July, and August, but fishing was erratic and the anchoveta lean. The abundant supply anticipated with the opening of the main fishing season around mid-September 1964 failed to materialize and fishing continued spotty through November. The northern fleet, numbering well over 200 purse-seine vessels, ranged as far south as Mejillones Bay in search of the elusive anchoveta, but without much success. In early December 1964 limited numbers of anchoveta reappeared off the northern coast but the fish were small and had a low oil content. Fishing through January 1965 was also poor.

In early 1965 some 35 fish reduction plants with a combined capacity of almost 1,100 metric tons of raw fish an hour were in production or nearing completion in northern Chile (Tarapaca Province); 18 months earlier there were only 13 fish meal plants in northern Chile and their combined capacity was only about 284 tons of fish an hour. Over the same interval the Chilean anchoveta fleet has tripled its fishing power. Yet during that time the industry has had only 5 months of good fishing. During 1964 it is doubtful that the industry ever operated at maximum capacity. With normal operations, Chilean export earnings in 1964 from fish oil and meal could have reached US\$25 million; actual shipments, however, were valued at slightly less than \$15 million. (United States Embassy, Santiago, February 20, 1965.)

SARDINE CANNING INDUSTRY:

Chile now has only one plant canning sardines under government sponsorship--it is the Industria Pesquera Cavanchain Iquique. Its entire production is marketed domestically.

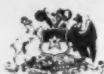


Boxes of sardines and anchovies destined for a canning plant in a small fishing village on the Chilean coast.

Chile (Contd.):

The Chilean Government is also financing the construction of a new cannery at the Empresa Pesquera de Tarapaca S. A., also located in Iquique. The new cannery, expected to begin operations in May or June 1965, will include 4 production lines, 1 of which will can Spanish sardines with a capacity of about 300,000 cases a year.

There are also several privately owned firms in Chile which can sardines. (United States Embassy, Santiago, March 9, 1965.)



Denmark

FISHERY LANDINGS, UTILIZATION, AND EXPORTS FOR 1964 AND OUTLOOK FOR 1965:

Landings: Denmark's fishing industry set new records in 1964 with landings of 865,000 metric tons valued at 546 million kroner (US\$79.2 million), an increase of 3 percent in quantity and 15 percent in value over the previous year. Landings of plaice, herring, and salmon were above those in 1963, and pond trout production set a new record.

The value of Danish landings in foreign ports was about the same as in 1963, but that of landings by foreign vessels in Danish ports was higher. The average price per pound for the total 1964 catch was up 10 percent from

the previous year because of higher prices paid for food fish, herring in particular, and industrial fish. The quantity of fish used for processing continued to increase in 1964, especially for herring and plaice fillets.

Disposition of Catch: The Danish Fisheries Minister estimates that about 25-30 percent of Denmark's fishery catch is used for food and 70-75 percent is for industrial use (fish meal and oil, fish and fur-animal feeding, and ensilage). Landings of Norway pout and sand eels all go for industrial use. Also, 80 percent of the 1964 landings of herring and brisling, more than 90 percent of the haddock landings, and 25 percent of the mackerel landed were for industrial use.



Fig. 1 - Hvide Sande, a small fishing port on Jutland west coast.

| Table 1 - Disposition of Danish 1964 Fishery Landings with Comparisons | | |
|--|-----------------------|-----------------|
| Item | 1964 | 1963 |
| | ... (Metric Tons) ... | |
| <u>Processed for consumption:</u> | | |
| <u>Fillets:</u> | | |
| Flatfish | 20,000 | 18,000 |
| Cod & codlike | 22,000 | 20,800 |
| Herring | 36,000 | 28,500 |
| Canned (sterile) | 11,000 | 11,600 |
| Smoked | 5,000 | 4,100 |
| Other | 9,000 | 1/ |
| Total | 103,000 | 1/ |
| <u>Fish meal and oil:</u> | | |
| Fish and fish waste used | 2/500,000 | 2/470,000 |
| Meal produced | 112,000 | 96,000 |
| Oil produced | 33,000 | 28,000 |
| <u>Fish ponds and animal farms:</u> | | |
| Fish and fish waste | 130,000-150,000 | 130,000-150,000 |
| <u>Ensilage:</u> | | |
| Fish and fish waste | 7,000 | 2/6,000 |
| 1/Not available. | | |
| 2/Estimated. | | |

Despite the relatively good prices offered in 1964 for iced and boxed drawn haddock, fishermen claimed they could not take the time required for the extra effort in landing haddock as food fish.

Exports: SUMMARY: Denmark's total exports of fishery products and byproducts in 1964 were up 4 percent in quantity and 15 percent in value from 1963, in spite of a substantial decline in shipments to the United States.

Denmark's fishery exports, especially fresh and frozen, would have been still greater in 1964 if additional supplies had been available. Export gains were recorded in all major categories except canned shellfish and

Denmark (Contd.):

Table 2 - Danish Fishery Products Exports^{1/} to all Countries, 1963-1964

| Product | 1964 | | | 1963 | | |
|--|----------------|----------------|----------------|----------------|----------------|---------------|
| | Quantity | Value | | Quantity | Value | |
| | Metric Tons | Kr. 1,000 | US\$1,000 | Metric Tons | Kr. 1,000 | US\$1,000 |
| Fresh, frozen, & cured: | | | | | | |
| Fresh fish | 199,338 | 358,722 | 51,990 | 200,519 | 314,100 | 45,523 |
| Frozen fish | 49,579 | 181,245 | 26,268 | 46,538 | 152,097 | 22,043 |
| Salted fish | 5,890 | 18,857 | 2,733 | 9,945 | 26,881 | 3,896 |
| Smoked fish | 631 | 9,170 | 1,329 | 517 | 7,322 | 1,061 |
| Canned products: | | | | | | |
| Fish | 6,141 | 22,556 | 3,269 | 5,507 | 20,474 | 2,967 |
| Shellfish | 1,181 | 9,676 | 1,402 | 1,952 | 12,738 | 1,846 |
| Semipreserved products: | | | | | | |
| Fish | 1,533 | 9,481 | 1,374 | 1,663 | 9,291 | 1,346 |
| Shellfish | 861 | 5,845 | 847 | 168 | 2,625 | 380 |
| Other products: | | | | | | |
| Fish meal, fish oil, solubles, ensilage, and trout food .. | 109,216 | 110,228 | 15,975 | 93,261 | 83,979 | 12,171 |
| Total | 374,370 | 725,780 | 105,187 | 360,070 | 629,507 | 91,233 |

^{1/}Includes direct shipments from Greenland and direct landings by Danish vessels in foreign ports.

salted fish. In 1964, exports of fresh and frozen fillets--up 32 and 22 percent, respectively--accounted for 30 percent of all fishery exports by value.

Danish fishery products were exported to 129 countries in 1964.

EXPORTS TO COUNTRY ECONOMIC GROUPS: The European Common Market (EEC) accounted for 42 percent of the value of Danish fishery exports in 1964, and the European Free Trade Association (EFTA) took 37 percent.

West Germany continued as the largest importer, accounting for 27 percent of the value of Denmark's total fishery exports in 1964. The United Kingdom was in second place with 18 percent of the total. The shipments to West Germany consisted mainly of fresh herring, herring fillets, and eels. Exports to the United Kingdom were mainly

fresh flatfish (including direct landings), frozen flatfish fillets, and pond trout. Sweden continued to take substantial amounts of a variety of Danish fish, including salmon, pond trout, plaice and other flatfish, fresh and frozen fillets, and fish offal for Swedish fur-animal farms.

Exports to the East Bloc in 1964 rose 17 percent from the previous year, despite a 7 percent drop in exports to East Germany. Larger fish meal shipments to Poland accounted for most of the increase in shipments to the East Bloc.

Table 3 - Value of Danish Fishery Products Exports by Areas and Major Countries, 1963 and 1964

| Destination | 1964 | | 1963 | |
|--|----------------|----------------|----------------|---------------|
| | Kr. 1,000 | US\$ 1,000 | Kr. 1,000 | US\$ 1,000 |
| By areas: | | | | |
| Common Market (EEC) | 306,000 | 44,350 | 260,000 | 37,700 |
| European Free Trade Assn. (EFTA - including Finland) | 268,000 | 38,850 | 225,000 | 32,625 |
| East Bloc countries | 35,000 | 5,075 | 30,000 | 4,350 |
| Other countries | 117,000 | 16,950 | 114,500 | 16,600 |
| Total | 726,000 | 105,225 | 629,500 | 91,275 |
| Major importers by country: | | | | |
| West Germany | 196,000 | 28,400 | 159,000 | 23,050 |
| United Kingdom | 132,000 | 19,150 | 109,000 | 15,800 |
| Sweden | 79,000 | 11,450 | 59,000 | 8,550 |
| Italy | 44,000 | 6,375 | 39,000 | 5,650 |
| Switzerland | 40,000 | 5,800 | 36,000 | 5,200 |
| United States | 33,000 | 4,775 | 46,500 | 6,750 |

EXPORTS TO THE UNITED STATES: Danish exports of fishery products to the United States in 1964 were down 29 percent in value and 36 percent in quantity from 1963 due mainly to a drop in exports of frozen cod fillets (blocks). Contributing to the drop in cod fillet sales to the United States were (1)



Fig. 2 - A pond trout enterprise in Denmark.

Denmark (Contd.):

a lower catch in Greenland, and (2) strong demand and better prices in England and on the European Continent.

In the face of strong competition in the U. S. market, there were declines in the exports of frozen trout because of imports from Japan, and in canned shrimp because of supplies from U. S. canners and other foreign sources. The only substantial gain in shipments to the United States was in exports of flatfish, accounted for mainly by a sharp rise in sole exports.

landings in Denmark by foreign fishermen and (2) rationing of Danish herring landings.

On March 11, 1965, the Danish Fisheries Minister submitted to the Folketing (Parliament) a proposal which would enable him to establish minimum prices for exports of fish and fishery products after consultation with an Export Committee. The 8-man Export Committee would consist of representatives from all segments of the fishing industry.

The Danish fishing industry is supporting the proposal to regulate minimum export prices. It is thought that competition between

Table 4 - Danish Fishery Products Exports to the United States¹, 1963-1964

| Product | 1964 | | | 1963 | | |
|--|-------------------------|---------------|--------------|-------------------------|---------------|--------------|
| | Quantity Metric Tons | Value | | Quantity Metric Tons | Value | |
| | | Kr. 1,000 | US\$1,000 | | Kr. 1,000 | US\$1,000 |
| Fresh & frozen: | | | | | | |
| Fillets: | | | | | | |
| Cod | 4,895 | 15,336 | 2,223 | 8,934 | 27,919 | 4,048 |
| Other fillets | 678 | 2,397 | 348 | 769 | 1,283 | 186 |
| Pond trout | 524 | 3,868 | 561 | 784 | 6,103 | 885 |
| Flatfish ² | 237 | 2,103 | 304 | 130 | 726 | 105 |
| Norway lobster | 199 | 3,930 | 570 | 212 | 4,368 | 634 |
| Other | 2 | 77 | 11 | 13 | 141 | 20 |
| Cured products: | | | | | | |
| Salted & smoked ³ | 81 | 255 | 37 | 105 | 207 | 30 |
| Canned products: | | | | | | |
| Herring & sprat | 572 | 2,790 | 404 | 556 | 2,977 | 432 |
| Shrimp | 117 | 1,189 | 172 | 175 | 1,654 | 240 |
| Mussels | 59 | 367 | 53 | 57 | 350 | 51 |
| Other | 33 | 208 | 30 | 40 | 227 | 32 |
| Semipreserved products | 15 | 195 | 28 | 20 | 240 | 35 |
| Fish solubles | 400 | 382 | 56 | 400 | 344 | 50 |
| Total exports | 7,812 | 33,097 | 4,797 | 12,195 | 46,539 | 6,748 |

¹/Does not include shipments to Puerto Rico or to the United States Army in Europe.

²/Mostly turbot, brill, plaice, and sole.

³/Mostly cod, herring, salmon.

Note: Exports shown include direct shipments from Greenland in 1964 as follows: cod fillets 2,618 tons, flatfish fillets 199 tons, other fillets 391 tons, salted cod 25 tons, and halibut 2 tons. Data on direct shipments from Greenland in 1963 are not available.

EXPORTS TO THE U. S. ARMY IN EUROPE: Danish fishery exports to the U. S. Army in Europe in 1964 totaled 93 tons valued at Kr. 721,000 (\$104,000) and consisted mainly of pond trout (69 tons), flatfish fillets (17 tons), and cod fillets (6 tons). Most of the deliveries to the U. S. Army in Europe were intended for resale in post exchanges and commissaries.

OUTLOOK FOR 1965: Danish exporters of fishery products look forward to 1965 with guarded optimism. But they express concern over (1) the possibility of rising prices for raw fish, and (2) increasing competition from large integrated fishery complexes in other countries. Measures are being debated to increase the supply of raw fish. Processors favor (1) relaxation of restrictions on direct

Danish exporters, especially in the Common Market, has caused reactions which could disrupt the trade. It has not been possible to achieve regulation on a voluntary basis. Violations of the proposed minimum price regulation could result in an exporter losing his license to export fish and fishery products for varying periods. The proposed regulation would not apply to Greenland or the Faroe Islands but Greenland products exported from Denmark would be covered. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, March 10 & 17, 1965.)

Notes: (1) See *Commercial Fisheries Review*, April 1965 p. 66, October 1964 p. 53, and March 1964 p. 50.

(2) For additional details request copy of MNL-5--"Denmark's Fishing Industry, 1964," from: Fishery Market News Service, U. S. Bureau of Commercial Fisheries, Room 510, 1815 N. Fort Myer Drive, Arlington, Va. 22209.

Finland

GOVERNMENT ASSISTANCE FOR FISHING INDUSTRY REQUESTED:

A Finnish committee representing several fishermen's associations as well as fur farmers submitted a report on March 3, 1965, to the Finnish Minister of Agriculture (the Cabinet member responsible for fishing questions) requesting government assistance to promote fishing and the marketing of fishery products in Finland. The committee proposed that a central organization be established to advertise domestic fishery products, and that more money be appropriated for fishing harbors, roads leading to harbors, supports for the transportation of fish, and loans to fishermen. The committee also recommended that fishing gear, landings, and processing equipment be exempt from sales taxes.



Fig. 1 - Selling fish on the Helsinki dock.



Fig. 2 - Finnish fishermen lifting Baltic herring fyke net in the Turku Archipelago area.

Although Finland has a long coastline on the Baltic Sea and many lakes, fishing has never played a very important role in the national economy. Finnish fishermen, for the

most part, have not had the equipment to go beyond the Baltic Sea to more productive areas. Finnish fish consumption, which amounts to about 18 kilograms (40 pounds) annually per capita, has been supplied to an increasing extent by imports, particularly in the cities. Employment in fisheries has dwindled as young people have moved to more lucrative occupations. Between 1953 and 1963 the number of households in Finland which claimed fishing as their main occupation declined from 4,880 to about 3,600. (United States Embassy, Helsinki, March 11, 1965.)



Ghana

NEW NORWEGIAN-BUILT STERN TRAWLER DELIVERED:

A Norwegian-built stern trawler, the Shama, was delivered to Ghana during February 1965. It was the eleventh large trawler acquired by the Government-controlled Ghana Fishing Corporation.

The Shama is the first of 7 trawlers being built in Norway for Ghana under an arrangement planned by the Norwegian Development Assistance which called for Norwegian experts to be sent to that country with the vessels.

All of the 7 vessels have an overall length of 231 feet 7 inches, and will be powered by diesel engines generating 1,960 hp., coupled to reversible propellers. (United States Embassy, Accra, February 21, 1965.)

Note: See Commercial Fisheries Review, August 1964 p. 65, June 1964 p. 52.

TRAINING PROGRAMS TO PROVIDE OFFICERS FOR NEW FOREIGN-BUILT FISHING VESSELS:

On January 22, 1965, the Governments of Ghana and Norway signed an agreement at Accra providing for the establishment of a center in Ghana to train Ghanaian deck officers and engineers to man Ghana's fishing fleet. Under the terms of the agreement, Norway will provide equipment and training specialists, and Ghana will be responsible for building and furnishing the training center and paying the salaries of the specialists employed in teaching. Estimated total cost of establishing the training centers is £G100,000 (US\$280,000).

Under another training program in Oslo, Norway, 17 Ghanaians are studying and work-

Ghana (Contd.):

ing in Norwegian shipyards in order to qualify as trawler engineers. The Oslo training course began in mid-October 1964.

In addition to 7 stern trawlers from Norway, Ghana has also ordered 10 stern trawlers and 2 fish-carrier vessels from Japan, 6 stern trawlers from Great Britain, and a number of vessels from the Soviet Union. Ghana has technical service agreements with all of those countries calling for help in operating the new vessels initially.

On January 30, 1965, the 244-foot trawler Subin, the 2nd of the 12 vessels ordered in Japan by Ghana, docked in Tema Harbor on its maiden voyage. The vessel, which has a capacity of 700 metric tons of fish, cost about \$1.4 million. Total cost of the 12 vessels ordered from Japan is reported to be about \$15 million. (United States Embassy, Accra, February 7, 1965; World Fishing, October 1964; and other sources.)

Note: See Commercial Fisheries Review, Feb. 1965, p. 60; Jan. 1965 p. 72; Aug. 1964 p. 65.



Iceland

EXPORT STOCKS OF
PRINCIPAL FISHERY PRODUCTS,
DECEMBER 31, 1964:

Iceland's stocks of frozen groundfish (fillets and blocks) for export to the United States totaled 1,327 metric tons as of December 31, 1964. (United States Embassy, Reykjavik, March 16, 1965.)

| Icelandic Export Stocks ^{1/} of Principal Fishery Products, December 31, 1964 | | | |
|---|--------------|--------------|----------------|
| Item | Quantity | Value | |
| | | Metric Tons | US\$ |
| Groundfish, frozen: | | | |
| For export to U. S. | 1,327 | 29.2 | 678.0 |
| For export to other countries | 1,624 | 28.1 | 652.5 |
| Stockfish | 5,180 | 145.0 | 3,366.9 |
| Herring: | | | |
| Salted | 2/ | 52.5 | 1,219.1 |
| Frozen | 3/4, 160 | 3/25.6 | 594.4 |
| Industrial products: | | | |
| Fish meal: | | | |
| Herring | 16,005 | 105.6 | 2,452.0 |
| Other fish meal | 1,112 | 6.8 | 157.9 |
| Herring oil | 27,349 | 227.0 | 5,270.9 |

^{1/}Includes only stocks intended for export.

^{2/}Not available.

^{3/}Includes 467 tons of frozen herring fillets valued at Kr. 4.5 million (US\$104,490).

Note: Icelandic kronur 43.06 equals US\$1.00.

United States imports of frozen groundfish fillets from Iceland in 1964 totaled 17,812 metric tons of groundfish blocks and slabs, 4,669 metric tons of cod fillets, 2,791 metric tons of haddock fillets, and 548 metric tons of ocean perch fillets.

A report in the British Fishing News, January 8, 1965, said that only 30 Icelandic trawlers were operating this year whereas 2 years ago the Icelandic trawler fleet numbered 48. A declining catch rate by Icelandic trawlers was also reported.

* * * * *

FISHERY LANDINGS BY PRINCIPAL
SPECIES, JANUARY-AUGUST 1964:

| Species | January-August | |
|------------------------------|---------------------------|----------------|
| | 1964 | 1963 |
| | (Metric Tons) | |
| Cod | 262,181 | 211,219 |
| Haddock | 36,971 | 35,064 |
| Saithe | 17,917 | 10,481 |
| Ling | 3,635 | 4,630 |
| Wolffish (catfish) | 7,894 | 12,423 |
| Cusk | 2,794 | 4,922 |
| Ocean perch | 20,904 | 26,005 |
| Halibut | 800 | 832 |
| Herring | 350,375 | 283,784 |
| Shrimp | 202 | 349 |
| Capelin | 8,640 | 1,077 |
| Lobster | 2,466 | 4,615 |
| Other | 7,038 | 5,653 |
| Total | 721,817 | 601,054 |

Note: Except for herring which are landed round, all fish are drawn weight.

* * * * *

UTILIZATION OF FISHERY LANDINGS,
JANUARY-AUGUST 1964:

| How Utilized | January-August | |
|--------------------------------------|---------------------------|----------------|
| | 1964 | 1963 |
| | (Metric Tons) | |
| Herring^{1/} for: | | |
| Canning | 93 | 291 |
| Oil and meal | 302,897 | 188,673 |
| Freezing | 13,402 | 21,863 |
| Salting | 33,983 | 67,340 |
| Fresh on ice | - | 5,617 |
| Groundfish^{2/} for: | | |
| Fresh on ice | 23,748 | 21,362 |
| Freezing and filleting | 158,371 | 141,785 |
| Salting | 84,635 | 68,355 |
| Stockfish (dried unsalted) | 80,667 | 66,971 |
| Canning | 24 | 35 |
| Oil and meal | 2,923 | 2,811 |
| Capelin for: | | |
| Freezing | 133 | 188 |
| Oil and meal | 8,507 | 889 |
| Shrimp for: | | |
| Freezing | 166 | 267 |
| Canning | 36 | 82 |
| Lobster for: | | |
| Fresh on ice | - | 2 |
| Freezing | 2,466 | 4,613 |
| Home consumption | 9,766 | 9,910 |
| Total production | 721,817 | 601,054 |

^{1/}Whole fish.

^{2/}Drawn fish.

Iraq

PLANS TO DEVELOP ITS
COMMERCIAL FISHERIES:

The Government of Iraq plans to develop its commercial fisheries. Primary emphasis would be on resources in the Persian Gulf, but the possibility of fresh-water commercial fishing would also be explored.



According to the Director of Hydro-biology and Fisheries of Iraq's Ministry of Agriculture, the government will allot ID500,000 (US\$1.4 million) for this fishery project in the next Five Year Plan. It is expected that definite plans for the fisheries project will be formulated after surveys are made.



Italy

EEC SETS ITALIAN DUTY-FREE
IMPORT QUOTAS IN 1965 FOR
FROZEN TUNA AND SALT COD:

A total of 36,000 metric tons of chilled or frozen tuna destined for the canning industry may enter Italy duty-free in 1965. The quota was set by the Commission for the European Common Market (EEC) and announced by the Italian Minister of Foreign Commerce, December 30, 1964. The EEC also set a 1965 Italian duty-free import quota of 34,000 tons for "merluzzi" (cod) consisting of "stockfish" and "baccala," salted, either in brine or dried, headless or in pieces. (*La Pesca Italiana*, Rome, January 7, 1965.)

TUNA VESSEL LAUNCHED:

In Venice on December 19, 1964, the tuna vessel *Albacora* was launched for an Italian

firm in Milan. The new vessel of 860 gross tons has these dimensions: length overall 66.6 meters (218 feet), width 10.6 meters (35 feet), depth 5.2 meters (17 feet). It is equipped with a 1,300-hp. engine. (*La Pesca Italiana*, Rome, January 7, 1965.)



Japan

FROZEN TUNA EXPORT
TARGETS FOR 1965/66:

At an executive meeting on February 25, 1965, the Japan Export Frozen Tuna Producers Association drafted plans for the business year April 1965-March 1966 for submission to the special general session of the Association on March 8. Reportedly, the Association has set up the following frozen tuna export targets:

1. Direct exports to the United States and Canada: albacore 30,000 short tons; yellowfin 30,000 tons; loins 7,500 tons; and reserve 15,000 tons.
2. Transshipments: Indian Ocean 4,000 short tons (transfer of quota from Japan proper will be recognized); transshipments to Italy 60 percent of the Atlantic tuna fleet's average yearly catch for the past three years, plus 18,000 metric tons to be made available to those who consume their quota; Atlantic Ocean transshipments to the United States, catch of 150 vessel trips (30 additional trips may be supplemented at discretion of executive committee).
3. Exports to overseas bases: 4,000 short tons, plus a supplementary quota of 4,000 tons. (Note: This quota far below actual quantity exported to overseas bases. The Producers Association customarily sets a minimum export target at the beginning of the business year and subsequently increases quota allocation as necessary.)
4. Swordfish exports to the United States: 10 million pounds (8.45 million pounds to be allocated on basis of past performance record, 1.5 million pounds to be made available to firms that have consumed their quota, and reserve quota of 50,000 pounds). (*Suisan Tsushin*, February 26, 1965.)

Japan (Contd.):

EXPORT VALIDATIONS OF FROZEN TUNA AND TUNA LOINS TO UNITED STATES, JANUARY 1965:

Japan's export validations of frozen tuna and frozen tuna loins to the United States in January 1965 totaled 11,391 short tons, an increase of 65 percent compared with 6,903 tons shipped in the same month in 1964. Frozen tuna and tuna loins authorized for shipment direct from Japan in January 1965 were

| Japan's Export Validations of Frozen Tuna and Tuna Loins to U. S., January 1965 with Comparisons | | | | | | | |
|---|--------------|-------------------|--------|-------------------|-------|-------|---------------|
| Item | January 1965 | | | January 1964 | | | Total 1964 |
| | Direct | Trans- shipped | Total | Trans- shipped | Total | | |
| (Short Tons). | | | | | | | |
| Albacore, round | 2,686 | 5,844 | 8,530 | 1,004 | 2,100 | 3,104 | 59,497 |
| Yellowfin: | | | | | | | |
| Round | - | 459 | 459 | - | 162 | 162 | - |
| Gilled & gutted: | | | | | | | |
| 20/100 lbs. | 678 | 182 | 860 | 1,393 | 286 | 1,679 | - |
| 100 lbs. up | 112 | - | 112 | 373 | - | 373 | - |
| Dressed with tail | - | 378 | 378 | - | 547 | 547 | - |
| Fillets | - | - | - | - | - | - | - |
| Total | 790 | 1,019 | 1,809 | 1,766 | 995 | 2,761 | 38,839 |
| Big-eyed: | | | | | | | |
| Gilled & gutted | - | - | - | - | - | - | - |
| Dressed with tail | - | 28 | 28 | - | - | - | - |
| Fillets | - | - | - | - | - | - | - |
| Total | - | 28 | 28 | - | - | - | 362 |
| Bluefin, fillets | 2 | - | 2 | - | - | - | 1 |
| Skipjack, round | - | 277 | 277 | 5 | 808 | 813 | 3,593 |
| Loins: | | | | | | | |
| Albacore | 645 | - | 645 | 195 | - | 195 | 3,805 |
| Yellowfin | 100 | - | 100 | 70 | - | 70 | 3,496 |
| Total | 745 | - | 745 | 225 | - | 225 | 7,301 |
| Grand total | 4,223 | 7,168 | 11,391 | 3,000 | 3,903 | 6,903 | 109,593 |

Source: Japan Frozen Food Exporters Association.

41 percent above the quantity exported in January 1964. Authorized transshipments in January 1965 were 84 percent above those in the same month of the previous year. On a species basis, albacore tuna exports were up 175 percent and tuna loins increased 231 percent, but yellowfin and skipjack exports were down 34 percent and 66 percent, respectively. (Fisheries Attache, United States Embassy, Tokyo, February 19, 1965.)

FROZEN TUNA AND SWORDFISH EXPORT QUOTAS:

The Japan Export Frozen Tuna Producers Association, at a special general meeting on March 19, 1965, set the following frozen tuna and swordfish export quotas for the 1965 business year which began in April.

1. United States and Canada--110,000 short tons; all other countries--70,000 metric tons. Allocations will be made on the basis of actual performance in the preceding year.

Thirty percent of the allocations will be offered to the Association, which will be set aside for adjustment purposes (adjustment quota). For market stabilization purposes, during the period April-September 1965, exports will be restricted to not more than 45 percent (49,500 short tons) of the quota to the United States and Canada and 60 percent (42,000 metric tons) of the quota for all other countries. Remaining portions of the quota will be exported during the period October 1965-March 1966.

2. Overseas bases (fresh and frozen tuna): American Samoa--25,000 metric tons; Espiritu Santo, New Hebrides Islands--6,000 tons; Fiji Islands--9,000 tons; Penang, Malaysia--6,000 tons; and St. Martin, Netherlands Antilles--2,000 metric tons.

3. Frozen tuna loins to the United States and Canada--9,000 short tons. Allocations will be made on the basis of export performance record for the preceding three-year period. Twenty percent of the allocations will be offered to the Association for adjustment purposes (adjustment quota).

4. Frozen swordfish exports to North and South America will be limited to 5,500 short tons. Allocations will be made according to the actual performance record for the preceding three-year period. Ten percent of the allocations will be offered to the Association for adjustment purposes (adjustment quota). (Suisan Tsushin, March 20; Suisancho Nippo, March 22, 1965.)

Note: See Commercial Fisheries Review, May 1964 p. 56.

FROZEN TUNA EXPORT PRICE TRENDS:

The market in Italy for Japanese frozen yellowfin tuna in early March 1965 was reported firm. Dressed yellowfin exported to Italy brought US\$435 a metric ton c.i.f., and shipments of mixed yellowfin-albacore \$425 a ton c.i.f.

On the other hand, frozen gilled-and-gutted yellowfin delivered to Puerto Rico were quoted at \$340 a short ton, while yellowfin exported from Japan proper to California were selling at \$345-350 a short ton c. & f.

Beginning March 10 the cost of shipping frozen tuna from Japan to the U. S. west coast was reduced from \$57.75 to \$47.50 per short ton. The reduction in freight cost is said to

Japan (Contd.):

have heightened buying interest in the United States. (Suisan Tsushin, March 11, 1965.)

EXPORTS OF FISHERY AND AQUATIC PRODUCTS, APRIL 1-SEPTEMBER 30, 1964, WITH COMPARISONS:

The total value of Japan's exports of major fishery and aquatic products in the first six months (April 1-September 30) of the fiscal year beginning April 1, 1964, amounted to US\$143.3 million, an increase of 11.8 percent

canned fishery products 41.5 percent, cultured pearls 18.5 percent, whale oil 3.2 percent, salted and dried products 1.8 percent, and agar-agar 0.8 percent.

Exports of frozen and fresh fishery products during the period increased 85.2 percent in quantity and 47.7 percent in value as compared with the same period in 1963, canned fishery products were up 36.6 and 28.4 percent, cultured pearls 6.5 and 10.8 percent, and salted and dried products 13.9 and 21.1 percent, respectively. But exports of whale oil were down 79.3 percent in quantity and 79.0 percent in value. (Fisheries Attache,

| Japan's Exports of Fishery and Aquatic Products, April 1-September 30, 1964 with Comparisons | | | | | | | | | | |
|--|------------------|------------|--------------|------------|------------------|------------|----------------|------------|--------------|------------|
| Product | Fiscal Year 1964 | | | | Fiscal Year 1963 | | | | | |
| | Exports | | FY 1964 | | Apr. 1-Sept. 30 | | Oct. 1-Mar. 31 | | Total | |
| | Qty. | Value | Qty. | Value | Qty. | Value | Qty. | Value | Qty. | Value |
| | Metric Tons | US\$ 1,000 | Metric Tons | US\$ 1,000 | Metric Tons | US\$ 1,000 | Metric Tons | US\$ 1,000 | Metric Tons | US\$ 1,000 |
| Frozen Fish & Shellfish: | | | | | | | | | | |
| Tuna | 86,081 | 31,168 | 177,804 | 61,627 | 62,032 | 22,251 | 72,130 | 27,451 | 134,162 | 49,702 |
| Marlin | 3,123 | 1,900 | 6,800 | 4,320 | 2,354 | 1,596 | 3,573 | 2,247 | 5,927 | 3,843 |
| Salmon | 847 | 900 | 1,500 | 1,940 | 544 | 644 | 599 | 794 | 1,143 | 1,438 |
| Trout (Rainbow) | 938 | 805 | 1,500 | 1,415 | 763 | 717 | 692 | 649 | 1,455 | 1,366 |
| Shrimp | 529 | 777 | 1,500 | 2,174 | 499 | 691 | 846 | 1,222 | 1,345 | 1,913 |
| Other | 71,184 | 10,741 | 55,000 | 13,530 | 17,029 | 4,475 | 32,092 | 8,099 | 49,121 | 12,574 |
| Total frozen | 162,702 | 46,291 | 244,104 | 85,006 | 83,221 | 30,374 | 109,932 | 40,462 | 193,153 | 70,836 |
| Tuna, fresh | 8,357 | 2,577 | 55,500 | 16,095 | 9,157 | 2,706 | 11,055 | 3,248 | 20,212 | 5,954 |
| Other Products: | | | | | | | | | | |
| Salted & dried | 2,142 | 2,634 | 4,200 | 5,800 | 1,881 | 2,175 | 2,561 | 3,892 | 4,442 | 6,067 |
| Agar-agar | 323 | 1,093 | 350 | 1,260 | 190 | 664 | 209 | 687 | 399 | 1,351 |
| Whale oil | 23,949 | 4,609 | 118,700 | 24,990 | 115,562 | 21,946 | 108,326 | 22,963 | 223,888 | 44,909 |
| Pearls (cultured) | Lbs. 79,562 | 26,556 | Lbs. 157,073 | 51,300 | Lbs. 74,676 | 23,976 | Lbs. 78,437 | 26,656 | Lbs. 153,113 | 50,632 |
| Canned Fish: | 1,000 Cases | | 1,000 Cases | | 1,000 Cases | | 1,000 Cases | | 1,000 Cases | |
| Tuna | 3,343 | 19,127 | 4,450 | 37,513 | 2,130 | 17,876 | 1,938 | 15,990 | 4,068 | 33,866 |
| Salmon | 568 | 19,606 | 1,395 | 43,962 | 338 | 8,051 | 1,171 | 39,518 | 1,509 | 47,569 |
| Crab meat | 245 | 5,225 | 438 | 11,004 | 225 | 5,514 | 249 | 6,210 | 474 | 11,724 |
| Sardines | 24 | 188 | 100 | 780 | 158 | 1,179 | 22 | 184 | 180 | 1,363 |
| Saury | 504 | 3,031 | 1,650 | 10,680 | 594 | 3,697 | 923 | 5,858 | 1,517 | 9,555 |
| Horse mackerel | 415 | 2,807 | 600 | 3,948 | 251 | 1,686 | 178 | 1,414 | 429 | 3,100 |
| Other | 1,528 | 9,553 | 2,590 | 17,251 | 1,155 | 8,382 | 1,735 | 11,053 | 2,890 | 19,435 |
| Total canned | 6,627 | 59,537 | 11,223 | 125,138 | 4,851 | 46,385 | 6,216 | 80,227 | 11,067 | 126,612 |
| Total value of all products | | 143,297 | | 309,589 | | 128,226 | | 178,135 | | 306,361 |

Notes: (1) Value based on f.o.b. prices in Japan.
(2) Latest data are for first six months of fiscal year beginning April 1, 1964.
(3) Actual fiscal year 1963 exports revised.

over the same period in 1963. Frozen and fresh fishery products accounted for 34.1 percent of the total value of the items shown,

United States Embassy, Tokyo, February 17, 1965.)

Note: See Commercial Fisheries Review, August 1964 p. 68.

Japan (Contd.):

**PROGRESS OF NEGOTIATIONS ON
CANNED TUNA IN BRINE EXPORTS TO U.S.:**

Japanese canned tuna in brine exports to the United States have been suspended since December 1964 as a result of the dispute involving tuna packers and exporters and the failure of the two groups to conclude a new one-year export agreement (old agreement terminated November 1964).

On March 15, the directors of the Japan Tuna Packers Association, following negotiations with the exporters, agreed on a new sales procedure. As a result, hopes were held for an early settlement of the four-month dispute.

Points of agreement reached were: (1) Seventy percent of the total quantity of canned tuna in brine for export will be consigned to the Tokyo Canned Tuna Sales Company (representing packers) for sale to exporters on the basis of their past performance record. (2) Remaining 30 percent will be offered as an adjustment quota under a sales method to be determined by the Packers Association. (3) The period of sales will be determined through mutual consultations between packers and exporters although, as a rule, sales will be conducted on a quarterly basis. Depending on market conditions, sales period may be further divided as in the past.

However, on the same day, despite the accord on sales policy reached between the packers and exporters, the Exporters Association submitted for approval by the Ministry of International Trade and Industry (MITI) a new Exporters Agreement which provided for an 80-percent past-performance quota and a 20-percent adjustment quota. In view of the discrepancy between this provision and the quota allocation agreed to between the packers and exporters, the Packers Association, on March 20, formally requested the Exporters Association to revise the Agreement. According to the Exporters Association, there was insufficient time to incorporate the changes agreed upon but the Association would, in practice, honor the points of agreement reached with the Packers Association.

On March 17, the Japan Export Trade Deliberation Council (highest government-industry advisory group on marine products export) met and approved the enactment of the

"Ministerial Ordinance Related to Restrictions on FY 1965 (April 1965-March 1966) Canned Tuna Sales Procedure" submitted by the Fisheries Agency. Objective of the ordinance is to regulate sales of export canned tuna put up by packers who are not members of the Packers Association. In FY 1964 (April 1964-March 1965) the quantity of tuna packed by nonmember firms reportedly totaled about 91,000 cases.

The new ordinance, if approved by the Government, is scheduled to go into effect April 1. However, in view of the fact that the packers and exporters have not completely reached agreement on the Exporters Agreement, MITI is not expected to immediately act on the ordinance. (Suisan Tsushin, March 23; Suisan Keizai Shimbun, March 18; Nihon Suisan Shimbun, March 17, 1965.)

**RESEARCH VESSEL RETURNS FROM
EASTERN PACIFIC TUNA SURVEY:**

The Japanese Government research vessel Shoyo Maru (602 gross tons) returned to Tokyo, March 16, 1965, after a 157-day cruise to the eastern Pacific Ocean. The vessel made 27 long-line sets and averaged less than one fish per 100 hooks. The poor results were attributed to low water temperatures and to the vessel fishing in waters outside of the regular tuna fishing grounds.



Shoyo Maru, Japanese Government fishery research vessel.

The vessel also tested the effectiveness of whole saury bait as against half-a-saury bait. On 18 trials, the tuna hook rate for whole bait was 0.4 fish per 100 hooks as compared to 0.38 for half-a-bait. In the case of spearfish, the hook rate was 0.52 versus 0.38. The test indicated that the two types of saury bait did not differ greatly in effectiveness. However the results were held to be inconclusive. Further tests with half-a-saury bait in proven tuna grounds were recommended. The vessel found fairly large concentrations of saury in

Japan (Contd.):

waters not far removed from the tuna fishing grounds. (Suisan Keizai Shimibun, March 19, 1965.)

Note: See Commercial Fisheries Review, November 1964 p. 89.

TUNA MOTHERSHIP TO BE SENT TO SOUTH PACIFIC:

A large Japanese fishing company planned to dispatch the tuna mothership Yuyo Maru (5,500 gross tons) to the South Pacific on May 8, 1965. The mothership was expected to be accompanied by 55 tuna long-line vessels and to remain on the fishing grounds for about 116 days. The production target is 8,000 metric tons of tuna, spearfish, and shark.

Another Japanese fishery firm, which operates the tuna mothership Nojima Maru (8,800 gross tons), decided not to operate a tuna mothership fleet this year. (Suisan Tsushin, March 22, 1965.)

PURSE-SEINER TO FISH TUNA OFF GUAM IN NOVEMBER 1965:

A large Japanese fishing company is studying plans to send the 240-ton purse-seiner Kenyo Maru to the waters off Guam in early November 1965 to test fish for skipjack tuna. The Kenyo Maru, which is equipped with a power block, was sent to the New Zealand waters in March 1964 but the trip ended in failure due to the lateness of the tuna season and unfamiliarity with fishing grounds. The vessel, converted into a purse-seiner in 1962, has mainly been employed in the skipjack fishery off northeastern Japan. (Shin Suisan Shimibun Sokuho, March 19, 1965.)

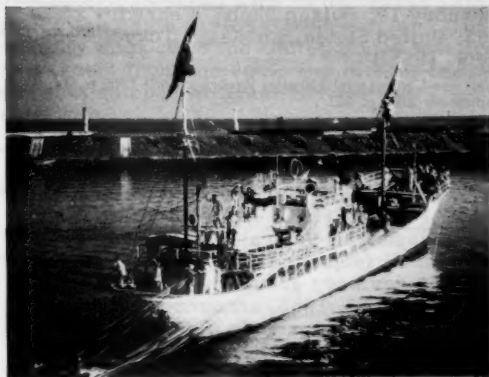
GOVERNMENT OFFICIAL STRESSES NEED FOR REDUCING TUNA FLEET:

The vice-president of the Japan Federation of Tuna Fishermen's Cooperative Associations (NIKKATSUREN) met with State Minister Kono on March 19, 1965, to explain the Federation's plan to overcome the stagnant conditions facing the Japanese tuna fishery. The Minister tentatively agreed to NIKKATSUREN's plan, but again emphasized the importance of reducing the size of the tuna fleet. NIKKATSUREN was to meet March 24 to complete

those sections of its stabilization plan dealing with sales expansion and management improvement, but planned to further study the problem of fleet reduction. (Nihon Suisan Shimibun, March 22, 1965.)

PRELIMINARY PLAN REVEALED TO REDUCE TUNA FISHING EFFORT:

The Japan Federation of Tuna Fishermen's Cooperative (NIKKATSUREN), on February 26, 1965, revealed the general outline of its preliminary master plan to reorganize the Japanese tuna fleet in an effort to overcome the economic difficulties confronting the fishing industry. NIKKATSUREN hopes to confer with the Fisheries Agency over its plan, which calls for reducing the tuna fleet in two phases. In the first phase, holders of tuna fishing rights who lend their rights to others and who do not themselves engage in fishing would be removed from the tuna fishery; vessels transferred from other fisheries to the tuna fishery would be suspended; and commercial fishing by government research vessels would be prohibited and such vessels be made to engage only in research activity for which they were originally intended. In the second phase, a more positive fleet reduction would be effected if the situation warranted such action.



Japanese tuna long-liner leaving Yatsu (principal tuna port) for the Indian Ocean.

NIKKATSUREN's plan also includes the following programs: (1) gear research to develop labor-saving devices which would help solve the labor shortage problem confronting the industry; (2) formation of small-scale fishery operators into corporations to strengthen Japan's competitive position in foreign mar-

Japan (Contd.):

kets; and (3) regulation of production and sales of albacore tuna for export to the United States in order to stabilize prices. (Nihon Suisan Shimbun, March 1; Minato Shimbun, February 27, 1965.)

EXPORT OF TUNA FISHING VESSELS TO SOUTH KOREA APPROVED BY CABINET:

The sale and export to South Korea of 11 tuna fishing vessels (valued at \$1.4 million) was approved by the Japanese Cabinet on February 9, 1965. Purchase negotiations for the vessels were made in spring 1964, and the vessels completed in summer 1964. The Japanese Government considers that approval for exporting the vessels is an "exception" to the Cabinet order which limits exports of Japanese fishing vessels to Korea to less than 20 tons and with a vessel age of over 5 years. The vessels are 140-ton refrigerated carrier vessels which can also serve as tuna vessels.

South Korean firms are ordering new Japanese "refrigerated vessels" in increasing numbers. In addition to the 11 vessels, several Korean fishing firms have placed orders for a total of 27 such vessels with three Japanese trading firms. (Suisan Keizai Shimbun, February 19; Suisan Shuho, February 25, 1965; United States Embassy, Tokyo, February 6, 1965.)

Note: See Commercial Fisheries Review, April 1965 p. 72; September 1964 p. 82.

ELEVEN LARGE TRAWLERS TO FISH IN GULF OF ALASKA IN 1965:

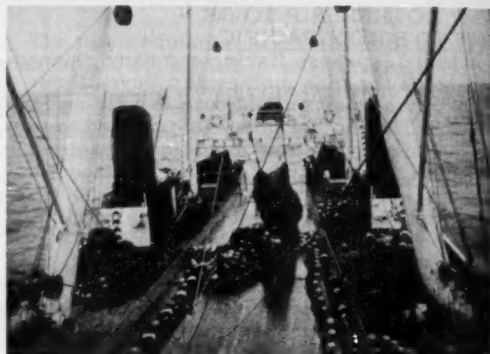
The Japanese Central Fisheries Coordination Council (supreme government-industry fisheries advisory group), at the 49th Session on February 26, 1965, announced its approval of the Fisheries Agency's plan to license in the Gulf of Alaska in 1965 the operation of 11 trawlers and to designate that operation as a licensed fishery. Previously, the Gulf trawl fishery had been designated an experimental fishery.

Gist of the Council's recommendations:

1. Experimental fishing operations conducted since September 1963 in the Gulf of Alaska waters have shown that the area will support a commercial fishery. Thus, trawl

operations in the Gulf of Alaska waters will henceforth be licensed on a commercial basis and a total of 11 large trawlers approved for operation.

2. The operational area in the Gulf of Alaska will include the waters between the meridians 175° W. and 135° W. longitudes north of 50° N. latitude, excluding the Bering Sea.



Aft deck view of Japanese stern trawler which in April 1964 was fishing Pacific ocean perch in Gulf of Alaska.

3. Trawlers between 550-3,500 gross tons will be licensed for operation. They will each be permitted to fish with one small trawler over 200 gross tons but under 550 tons. In the event that they do not directly engage in fishing, they will be permitted to fish with two small trawlers.

4. Licenses will be effective up to January 31, 1966.

5. Halibut, salmon, and king crab will not be taken. Those taken incidentally will be returned to the sea immediately. Catch of herring under 20 centimeters (7.9 inches) must not exceed in numbers 10 percent of the total catch of herring. Should it exceed 10 percent vessels must immediately move away from the area. Marine plants and animals must not be taken in waters within three miles off foreign territory. The possession on board vessels of long lines and gill nets is illegal. The responsible person on board the vessel must report to the government inspector the vessel's daily catch in accordance with provisions to be stipulated separately. (Suisan Keizai Shimbun, February 27; Nihon Suisan Shimbun, March 1, 1965.)

Japan (Contd.):

FISHERY ACTIVITIES IN
BERING SEA AND NORTH PACIFIC:

The stern trawler Tenyo Maru No. 3 (3,500 gross tons) departed Hakodate, Hokkaido, for the eastern Bering Sea on February 24, 1965. The trawler, which is scheduled to remain on the fishing grounds for about six months, until early August, will replace the stern trawler Taiyo Maru No. 82 (2,890 gross tons) fishing in the Bering Sea as of mid-February. The Taiyo Maru will be diverted to the Gulf of Alaska.

The 1,451-ton trawler Akebono Maru No. 53 was scheduled to depart for the Gulf of Alaska on March 8. That trawler previously operated in the eastern Atlantic Ocean off Africa.

The 14,000-ton fish meal factoryship Hoyo Maru operating in the Okhotsk Sea was scheduled to return to Japan in early April and to depart for the Bering Sea around April 20. The Hoyo Maru, under a special fisheries agreement concluded between Japan and the Soviet Union, is processing into fish meal (production target for 1965--5,000 metric tons) Russian-caught Alaska pollock. The factoryship is fishing with a fleet of 30-40 Russian trawlers.

The king crab factoryship Dainichi Maru (5,859 gross tons) and Tokei Maru (5,835 gross tons), each accompanied by 5 catcher vessels, departed Hakodate on March 1 for

Japanese fish meal factoryship Hoyo Maru.

the eastern Bering Sea. They were expected to arrive on the crab fishing grounds on March 12. The two fleets will experiment with crab pots for the first time this year. The Dainichi Maru is equipped with 150 crab pots and the Tokei Maru 130 pots. They will test the pots, on the average, for a period of about one week per month. (Suisan Keizai Shimbun, February 21, 24, and March 2, 1965.)

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CANNED SHRIMP EXPORTS,
JANUARY-FEBRUARY 1965:

Japan's exports of canned shrimp in January-February 1965 totaled 40,253 cases (converted to 24 1/2-lb. cans), a 14-percent decrease as compared with 59,040 cases shipped in the same period a year earlier. The quantity shipped to the United States was down 21 percent from the same two months in 1964, and that shipped to Great Britain was 7 percent less.

Table 1 - Japan's Exports of Canned Shrimp, by Country of Destination, January 1965

| No. Cans per Case | Size | U. S. | Great Britain | Canada | France | Other Countries | Total |
|---|--------|--------|---------------|--------|--------|-----------------|--------|
| (No. of Actual Cases) | | | | | | | |
| 24 1/2-lb. | Small | 3,000 | 150 | - | 500 | 155 | 3,805 |
| 24 1/2-lb. | Tiny | 2,870 | - | - | - | 815 | 3,685 |
| 24 1/4-lb. | " | - | 2,106 | - | 400 | - | 2,506 |
| 48 1/4-lb. | " | - | 1,019 | - | - | - | 1,019 |
| 24 1/2-lb. | Broken | 4,600 | - | 1,000 | - | 107 | 5,707 |
| 48 1/4-lb. | " | - | 6,551 | - | - | - | 6,551 |
| 24 1/4-lb. | Mixed | - | 9,350 | - | - | - | 9,350 |
| (No. of Standard Cases of 24 1/2-lb. cans). | | | | | | | |
| Total 1/Jan. 1965 | | 10,470 | 13,448 | 1,000 | 700 | 1,077 | 26,695 |
| Exports Jan. 1964 | | 7,467 | 12,520 | 1,720 | 3,720 | 1,596 | 27,023 |

1/Size of can indicates total weight of contents in can. Totals don't add because of conversion to standard cases.
Source: Japan Canned Crab Sales Co. (Sales agent for canned shrimp.)

Japan (Contd.):

Table 2 - Japan's Exports of Canned Shrimp, by Country of Destination, February 1965

| No. Cans per Case | Size | U. S. | Great Britain | Canada | France | Other Countries | Total |
|--|--------|--------|---------------|--------|--------|-----------------|--------|
| (No. of Actual Cases) | | | | | | | |
| 24 1/2-lb. | Small | 2,500 | - | - | 250 | 388 | 3,138 |
| 24 1/4-lb. | " | - | 2,000 | - | - | - | 2,000 |
| 24 1/2-lb. | Tiny | 400 | - | - | - | 1,450 | 1,850 |
| 48 1/4-lb. | " | - | 1,500 | - | - | - | 1,500 |
| 24 1/2-lb. | Broken | 4,750 | - | - | - | 20 | 4,770 |
| 48 1/4-lb. | " | - | 300 | - | - | - | 300 |
| (No. of Standard Cases of 24 1/2-lb. cans) | | | | | | | |
| Total 1/Feb. 1965 | | 7,650 | 3,800 | - | 250 | 1,858 | 13,558 |
| Exports Feb. 1964 | | 15,570 | 6,014 | 6,650 | 2,450 | 1,333 | 32,017 |

See table 1 for footnotes.

Of the total canned shrimp exports in January, the United States took 39 percent and Great Britain took 50 percent. The remainder went to Canada, France, and other unspecified countries.

Japan's canned shrimp exports in February were down to about one-half of the previous month's. The United States took 56 percent and Great Britain 28 percent of that month's exports. Canada did not receive any Japanese canned shrimp during February 1965. (Fisheries Attache, United States Embassy, Tokyo, March 24, 1965.)

FISH MEAL IMPORTS
AND EXPORTS, 1963-64:

Japan is a net importer of fish meal with imports far in excess of exports. Japanese imports of fish meal in 1964 totaled 102,277 metric tons, an increase of 21 percent from the previous year. Peru and the South Africa Republic were the principal suppliers, accounting for 97 percent of the total in 1964. United States shipments of fish meal to Japan in 1964 totaled 1,429 metric tons with a value of \$187,000.

Japan's exports of fish meal in 1964 amounted to 6,202 tons valued at \$834,000, compared with exports of 3,599 tons valued at \$464,000 in 1963. In 1964, the principal buyers of Japanese fish meal were the Ryukyus, Taiwan, and the Philippines, with combined shipments accounting for 68 percent of the total. In 1963, Taiwan, Hong Kong, and

| Japan's Fish Meal Imports, 1963-64 | | | | |
|------------------------------------|-------------|------------|-------------|------------|
| Country of Origin | 1964 | | 1963 | |
| | Quantity | Value | Quantity | Value |
| | Metric Tons | US\$ 1,000 | Metric Tons | US\$ 1,000 |
| Peru | 83,474 | 11,128 | 60,316 | 7,998 |
| Australia | 133 | 13 | 379 | 35 |
| South Africa Rep. | 15,741 | 2,140 | 18,208 | 2,363 |
| S.-W. Africa | 711 | 96 | 1,357 | 174 |
| Angola | - | - | 3,678 | 459 |
| Communist China | 99 | 15 | - | - |
| Thailand | 30 | 4 | - | - |
| Argentina | 126 | 13 | - | - |
| New Zealand | 253 | 25 | 254 | 20 |
| Netherlands | - | - | 20 | 3 |
| United States | 1,429 | 187 | 101 | 15 |
| Samoa | 281 | 42 | - | - |
| Total | 102,277 | 13,663 | 84,313 | 11,067 |

Source: Japanese Oils and Fats Import Council.

Singapore were the leading buyers of Japanese fish meal. (Fisheries Attache, United States Embassy, Tokyo, March 5, 1965.)

JOINT SOVIET-JAPANESE OKHOTSK SEA
FISH MEAL OPERATION SUCCESSFUL:

A large Japanese fishing company and the All-Soviet Food Import-Export Corporation concluded an agreement in December 1964 calling for the delivery in February-March 1965 of 30,000 metric tons (with a maximum limit of 36,000 tons) of Russian-caught Okhotsk Sea Alaska pollock to the Japanese firm's 14,000-ton fish meal factoryship Hoyo Maru (formerly Renshin Maru) for processing into 5,000 tons of fish meal. The Hoyo Maru de-

Japan (Contd.):

parted Japan for the Okhotsk Sea in late January to rendezvous with the Russian trawl fleet, which in mid-February was reported to total 30-40 trawlers. The average daily delivery (totaled over 700 metric tons) of Alaska pollock to the factoryship far exceeded expectations, and on March 19 the Hoyo Maru ended operations after exceeding its upper target of 36,000 tons by 300 tons and returned to Hakodate March 23. The factoryship was scheduled to leave for the eastern Bering Sea around April 24.

The newest joint venture with the Soviet Union, which is to run for a period of three years, was a success due to the production target being reached far earlier than expected and the firm price of fish meal in Japan. The factoryship's production was expected to sell for about 64,000 yen (US\$150) a metric ton.

Two other large Japanese fishing companies are reported to have undertaken studies to engage in a similar type of joint operation with the Soviet Union. The two firms are said to be carefully looking into this matter so as to be able to be in a position to most effectively use their factoryships on a year-round basis. Both firms operate fish-meal factoryships in the eastern Bering Sea during the summer season. During the winter season those same vessels (Tenyo Maru 11,581 gross tons, and Soyo Maru 11,192 gross tons, and Gyokuei Maru 10,357 gross tons) are employed as refrigerated carriers in the Antarctic whale fishery. However, the two firms feel that the international whale catch quota may well be greatly reduced this year as a resource conservation measure. In such an event, they will need to reassign some of their vessels now employed in the Antarctic whale fishery. Their plans which are opposed by the Hokkaido trawl fishermen, are said to be looked upon favorably by the Fisheries Agency due to the expanded demand for fish meal in Japan. Also from the standpoint of total Government policy, such a plan, if effected, would help control the outflow of dollars. (Suisan Tsushin, March 15, 17, 20, 23; Suisan Keizai Shimbum, March 14, 1965; and other sources.)

Note: See Commercial Fisheries Review, March 1965 p. 83.

FISHING VESSEL FLEET STATUS IN 1963 AND CONSTRUCTION TRENDS IN 1964:

Recent fishing vessel construction trends in Japan have been dominated by (1) the ex-

pansion of the trawler fleet, and (2) the increasing importance of fishing vessel exports. On the negative side is the proposal to reduce the number of bonito and tuna vessels in the Japanese fleet.



Fig. 1 - Oldertype of Japanese trawler operating in the Bering Sea.

Following is a Japanese fishing fleet report published by The Japan Times, March 12, 1965:

Fishing Fleet Status, 1963: Japan's fishing fleet consisted of almost 400,000 vessels with a combined tonnage of about 2 million gross tons as of December 1963, according to the Japanese Fisheries Agency.

About 190,000 marine motor vessels account for the greater part of Japan's fish catch.

Small coastal vessels of under 5 tons make up 87 percent of the total number of vessels. But offshore fishing vessels of over 50 tons account for 67 percent of the fleet's total gross tonnage.

After World War II, which destroyed Japan's fishing fleet, the building of fishing ves-

Japan (Contd.):

Table 1 - Size of Japanese Fishing Fleet, December 1963

| Vessel Type | Number of Vessels | Total Gross Tonnage |
|--|-------------------|---------------------|
| Ocean vessels: | | |
| With engines | 192,515 | 1,909,522 |
| Without engines | 185,196 | 155,663 |
| Total ocean vessels | 377,711 | 2,065,185 |
| Inland vessels (operating on rivers and lakes): | | |
| With engines | 3,600 | 4,733 |
| Without engines | 17,624 | 8,928 |
| Total inland vessels | 21,224 | 13,661 |
| Grand total | 398,935 | 2,078,846 |

sels was given priority in order to alleviate the prevailing food shortage.

Japan's basic program to restore its fishing fleet was completed in 1953. Then, the efficiency of the fleet was greatly increased in the 10-year period from 1953 to 1963. The use of diesel engines spread to vessels of all types. Also, there was sharp expansion in the distant-water fleet.

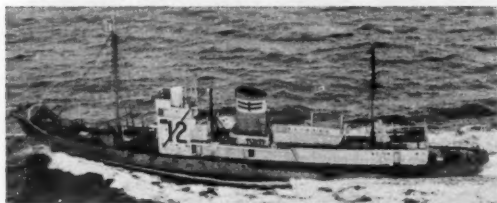


Fig. 2 - Japanese whale catcher in the North Pacific.

Between 1953 and 1963, the number of Japanese offshore fishing vessels of over 500 tons increased from 33 vessels (totaling 109,065 tons) to 240 vessels (totaling 691,042 tons). In 1953, the 500-ton vessel class included only 9 trawlers all of which were under 600 tons. By 1963, there were 39 offshore trawlers with an average tonnage of 1,659 tons. The long-line tuna fleet of 41 vessels (totaling 40,092 tons) in 1963 was nonexistent in 1953. The whaling fleet in 1963 included 57 vessels of over 500 tons as compared with only 1 such vessel in 1953.

Fishing Vessel Construction Trends, 1964: Approval of the Japanese Fisheries Agency is required for the construction of any marine fishing vessel of 15 meters (49 feet) or longer. The average Japanese fishing vessel with a 15-meter hull has an approximate gross tonnage of about 15 tons.

Table 2 - Japanese Vessel Construction Permits Issued in 1964

| Vessel Classification | Number of Vessels | Total Tonnage |
|--------------------------|-------------------|---------------|
| Steel vessels | 503 | 109,503 |
| Wooden vessels | 338 | 13,351 |
| Total | 841 | 122,854 |

Japanese fishing vessel construction permits issued in 1964 (table 2) indicate a general shift to steel vessels. The catcher vessels carried on motherships used to be made of wood. The last 2 years, a number of those wooden catcher vessels have been replaced with vessels made of steel or light alloys.

Trawler construction is becoming increasingly important in Japan. Japanese shipyards began building large trawlers in the 1950's and by the end of 1964 had launched 18 trawlers in the over 2,000-ton class, 17 trawlers of 1,000-2,000 tons, 8 trawlers in the 1,000-ton class, and a number of smaller trawlers in the 300-1,000 ton class.



Fig. 3 - A 1,000-ton cargo vessel used by Japanese to transport iced fish to Japan. Takes on fish from fishing vessels at sea.

Export orders are increasing at Japanese shipyards. In January 1965, a Japanese shipbuilder launched the first of eight 19,000-ton fish factoryships for the Soviet Union. Japan has also built tuna motherships for the Soviets, trawlers for Rumania and Ghana, and survey ships for Thailand and Indonesia. Japan is building several steel vessels of 100 to 300 tons for countries in southeast Asia. Japanese technicians have also advised on the construction of wooden fishing vessels in a number of developing countries.

Note: See *Commercial Fisheries Review*, Apr. 1965 p. 86; Feb. 1965 p. 60; Dec. 1964 p. 94; Nov. 1964 p. 97; Oct. 1964 p. 57; July 1964 p. 65; May 1964 p. 61.

* * * * *

Japan (Contd.):

FISHERMEN'S WAGE SCALE:

The Japan Seamen's Union is negotiating a new wage agreement for crew members of tuna fishing vessels belonging to the Nambu Tuna Cooperative Association in northern Japan. Wage scales proposed by the Seamen's Union are:

| Base Pay and Bonus Distribution to Crew Members | | | |
|---|------------------|------|---------------|
| Position | Monthly Base Pay | | Bonus Percent |
| | Yen | US\$ | |
| Skipper-fishing captain | 44,000 | 122 | 2.5 |
| Fishing captain | 34,000 | 94 | 2.0 |
| Skipper, chief engineer, and chief radio operator | 24,000 | 67 | 1.5-1.6 |
| First mate, first engineer, deck chief, refrigeration chief, & chief cook | 18,000 | 50 | 1.2-1.3 |
| Second mate, second engineer, and assistant refrigeration chief | 17,500 | 49 | 1.1-1.2 |
| Deck workers, engine crew, and cooks | 15,000 | 42 | 1.0 |

| Table for Computing Bonus for 90- to 100-day Trip | | | |
|---|-------------------|-----------|---------------|
| Vessel Size Gross Tonnage | Value of Landings | | Bonus Percent |
| | Million Yen | US\$1,000 | |
| Under 100 tons | 7-8 | 19-22 | 3.6 |
| " " " | 8-9 | 22-25 | 5.8 |
| " " " | Over 15 | Over 41 | 16.1 |
| 180 tons | 10-12 | 28-33 | 6.0 |
| " " " | 15 | 41 | 10.4 |
| 240 tons | 15 | 41 | 10.0 |

In addition, the Union's proposal includes provisions for pay and allowances for crew members on shipboard duty or on shore leave, pay for crews in reserve status and those on standby status at their homes, and compensation for duty-connected as well as nonduty-connected deaths.

Japanese fishermen engaged in the bottom long-line sea bream fishery in the South Pacific off New Zealand are paid a guaranteed minimum wage ranging from 42,000 to 60,000 yen (US\$117-167) a month, depending on catch and trip length. Fishermen sailing on vessels with catch targets of 300 metric tons of sea bream are guaranteed a minimum monthly wage of 50,000 yen (\$139) if trips are completed within 90 days and 42,000 yen (\$117) for trips up to 120 days. Those sailing on vessels operating under a catch share system whereby landings (after deducting operating expenses) are shared between management and crew at the ratio of 60:40, are guaranteed a minimum wage of 60,000 yen (\$167) if the value of one share falls below that amount.

Shares allotted to crew members of vessels operating under this system are: fishing captain--2.0; skiff captain--1.1-1.2; and skiff crew--1.0. (*Suisan Keizai Shimbun*, February 12; *Minato Shimbun*, February 4, 1965.)

**FISHERY WHITE PAPER
ISSUED BY GOVERNMENT:**

The Japanese Cabinet approved on February 12, 1965, the Fishery White Paper prepared by Japan's Ministry of Agriculture-Forestry. The report revealed that Japan's fishery production during fiscal year 1963 (April 1, 1963-March 31, 1964) totaled 6,700,000 tons, a decrease of 2.5 percent from the preceding fiscal year. But there was an increase of 13.2 percent in value US\$1,342 million) because prices rose 17 percent.

In order to meet growing demand with short supplies, Japan imported 490,000 tons of ma-



Fishermen are hauling yellowtail into fishing boats. Fishing for that species begins in winter on the Kumanonada fishing grounds.

Japan (Contd.):

rine products valued at \$60 million, or more than double the imports for the previous fiscal year. Exports of marine products declined 10 percent to about \$283 million.

The number of fishermen in Japan, which has been decreasing in recent years, dropped further to 626,000 as compared with 667,000 in fiscal year 1962. The departure of fishermen from sea coast villages for more lucrative urban jobs has been the principle cause of this decline, the paper points out.

The number of fishing enterprises also decreased 2.5 percent in fiscal year 1963 down to a total of 221,000. The decrease was mostly confined to small enterprises, but medium-scale enterprises showed an increase.

The sharp rise in prices of fish boosted fishermen's incomes by 15 to 25 percent while income from cultivating pearls and other marine life nearly doubled. The labor shortage in the fishing industry resulted in a 25-percent increase in wages, but they were still considerably lower than those paid to urban factory workers.

The white paper concludes that Japan's fishing industry needs to make further efforts for conservation and development of marine resources, enhancement of fishing productivity, and modernization of fishing operations. (Japan Report, Consulate General of Japan, New York, N.Y., February 15, 1965.)

ANTARCTIC WHALE CATCH FOR 1964/65 SEASON AS OF MARCH 1, 1965:

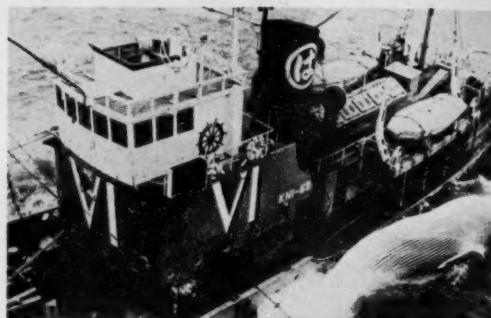
Japan's 7 whaling fleets operating in the 19th international Antarctic Whaling Expedition of the 1964/65 season harvested the equivalent

Japanese 1964/65 Antarctic Whale Catch as of March 1, 1965

| Fleet | Fin | Sei | Catch | Target Catch |
|----------------------|-----------------|-------|--------------------|--------------|
| | (No. of Whales) | | (Blue-Whale Units) | |
| Kyokuryo Maru No. 2. | 570 | 1,220 | 488.4 | 638 |
| Kyokuryo Maru No. 3. | 502 | 1,553 | 509.8 | 638 |
| Nisshin Maru | 640 | 1,319 | 539.8 | 630 |
| Nisshin Maru No. 2 . | 748 | 1,115 | 559.8 | 600 |
| Zunan Maru | 752 | 722 | 496.4 | 622 |
| Zunan Maru No. 2 . . | 393 | 1,515 | 449.0 | 622 |
| Total | 3,605 | 7,444 | 3,043.2 | 3,750 |
| Nisshin Maru/ . . . | 420 | 1,200 | 410.0 | 410 |
| Grand total . . . | 4,025 | 8,644 | 3,453.2 | 4,160 |

1/Quota attained February 28.

valent of 3,453.2 blue-whale units as of March 1, 1965, or 83 percent of the Japanese 4,160 blue-whale unit quota for the season. The full blue-whale unit quota was expected to be met by April 20.



Japanese whaling catcher boat towing a whale.

During the 1963/64 season, the Japanese Antarctic whaling fleets caught 5,722 fin whales and 1,522 sei whales by February 15, 1964. (Suisan Tshushin, March 4, 1965.)

Note: See Commercial Fisheries Review, April 1965 p. 74; May 1964 p. 62.

WHALE CATCH FROM COASTAL AREAS, 1964:

Japan's whale catch from coastal areas by five fishery firms in 1964 was up 7 percent from the previous year's catch. Sperm whales accounted for 64 percent of the total whale catch, the same as in 1963. Despite the high-

Japanese Coastal Whale Catch and Oil Production, 1963-64

| Year | Catch | | | | | Oil Production | | |
|------|-----------------|------|-----|-----------|-------|----------------|-------|-------|
| | Fin | Blue | Sei | Hump-back | Sperm | Total | Blue | Sperm |
| | (No. of Whales) | | | | | (Metric Tons) | | |
| 1964 | 7 | 120 | 875 | 1 | 1,800 | 2,803 | 1,663 | 6,050 |
| 1963 | 2 | 67 | 855 | 3 | 1,694 | 2,621 | 1,775 | 6,502 |

Source: Japan Aquatic Oil Association.

er 1964 catch, whale oil production was 7 percent below the 1963 oil yield. (Fisheries Attache, United States Embassy, Tokyo, March 5, 1965.)



Republic of Korea

FIRST TUNA FISHING VESSEL UNDER FRENCH-ITALIAN CONTRACT:

The first tuna fishing vessel (under a contract calling for a total of 99 vessels of various types to be supplied to Korea by a French-Italian consortium) was to be delivered in early March 1965 to the Korea Marine Industry Development Corporation. The vessel will sail to an area near Samoa for tuna fishing.

Some 40 fishing vessels are scheduled to be delivered to Korea by the consortium by the end of 1965. (United States Embassy, Seoul, March 9, 1965.)

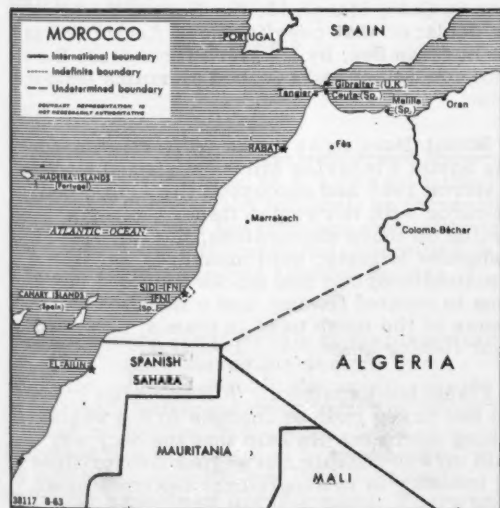
Note: See *Commercial Fisheries Review*, December 1964 p. 105.



Morocco

CANNED FISH SALES TO CUBA INCREASE:

Morocco's 1964/65 fishing season (June 1-May 31) started off well and compared favorably with the previous season when a record was established for fishery exports. For the first 5 months of the current fishing season (June-October 1964), exports of Moroccan canned fish were up slightly over the same period of the 1963/64 season. Sardines are by far Morocco's leading fishery export, but a large tuna catch resulted in a 20-percent increase in exports of canned tuna through October 1964.



France has been a major importer of Moroccan fishery products but two major shifts have occurred in Morocco's marketing pattern. Sales to the sterling zone are off sharply since shipments to Ghana, a major importer of Moroccan sardines, are down presumably as a result of competition from the developing West African fishing industry.

The more important change in the marketing pattern for Moroccan fishery products is in sales to Cuba. In the period of June-October of the 1964/65 fishing season Morocco shipped to Cuba 347,755 cases of canned fish, mainly sardines, as compared with only 143,655 cases for the entire 1963/64 season. (United States Embassy, Rabat, February 12, 1965.)



Norway

WINTER HERRING AND COD FISHERIES, EARLY MARCH 1965:

Winter Herring: The cooperative Norwegian Herring Sales Organization reports that some 2 million hectoliters (186,000 metric tons) of winter herring had been landed in Norway as of March 8, 1965, compared to 1.6 million hectoliters (148,800 tons) at the same time last year. With better weather conditions, the catch might have been at least 4 million hectoliters (372,000 tons). Almost 1.7 million hectoliters (158,100 tons) of the 1965 catch have gone to herring meal and oil plants--an increase of 52 percent over last year, while the catch is up only 35 percent.

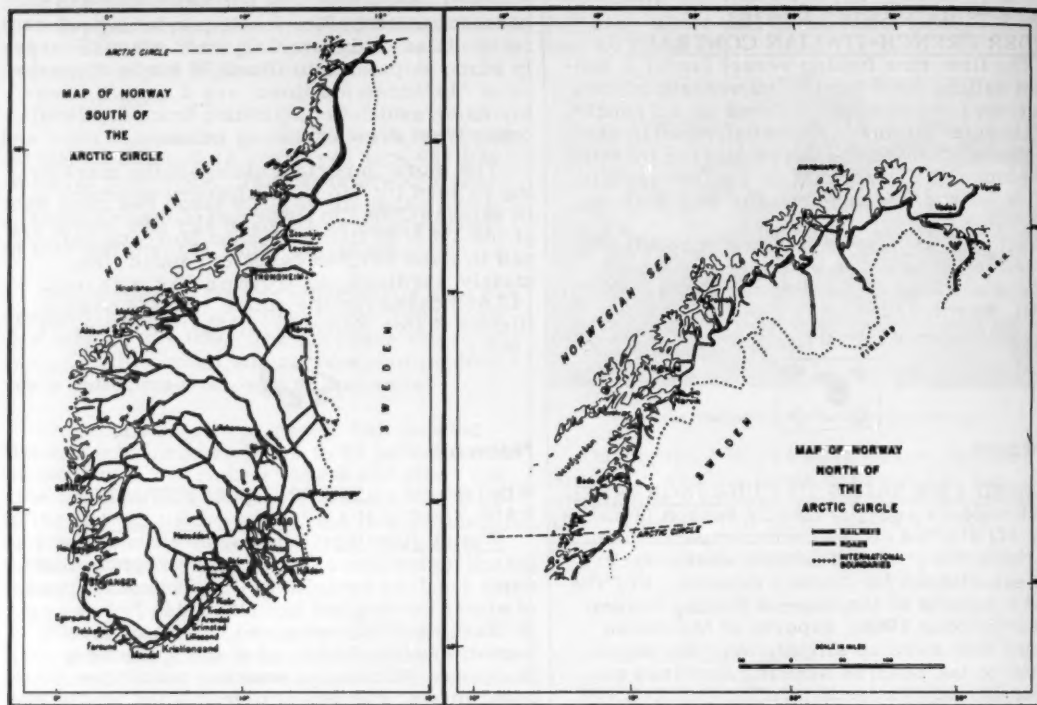
North Norway reported a disappointing winter herring catch of only 640,000 hectoliters (59,520 tons) as of early March.

Cod: The Lofoten cod fishery, also in North Norway, has been plagued by stormy weather, causing heavy damage to fishing gear. As of early March 1965, the Lofoten cod catch totaled 7,074 metric tons.

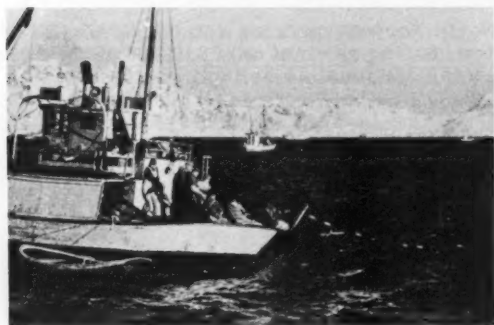
According to a Norwegian oceanographer, it is doubtful whether mature Arctic cod will follow their traditional route to the Vestfjorden spawning banks. They seem quite content to gorge on herring in the waters around Skomvaer and Røst. And, judging from all indications, the cod are likely to spawn in those waters.

Only 5,067 fishermen, manning 1,617 vessels, were participating in this year's Lofoten

Norway (Contd.):



fisheries. Unless there was a notable improvement in the catch, many were expected to leave.



Norwegian vessel fishing cod in Lofoten area.

The Norwegian Fisheries Minister has expressed grave concern about the future of the Lofoten cod fishery which, until a few years

ago, afforded good earnings for up to 25,000 North Norway fishermen. At a press conference in Oslo, March 12, the Norwegian Minister declared that overfishing of Arctic cod in the Barents Sea, by trawlers from most European countries, had reached alarming proportions.

Soviet-Norwegian Talks on Arctic Cod:

The Soviet Fisheries Minister visited Norway in March 1965 and discussed the Arctic cod resource with Norwegian fishery experts. Reporting on those discussions, the Norwegian Fisheries Minister said measures suggested to maintain Arctic cod stocks included regulations to control fishing, and a mandatory increase of the mesh used in trawls, nets, and other fishing gear.

Fisheries Expansion: A Norwegian scientist has urged radical changes in Norwegian fishing methods. He said that the only way to build up a profitable Norwegian fish-processing industry is to supplement the traditional

Norway (Contd.):

coastal fisheries with offshore fishing. This would require a fleet of large freezer trawlers which could exploit the most productive fishing grounds on a year-round basis. The development of deep-sea fishing, based on freezer trawlers, would also help to make the coastal fisheries more profitable, he declared. (*News of Norway*, March 18, 1965.)

* * * * *

FIRST WEEK OF WINTER HERRING SEASON YIELDS EXCELLENT CATCHES:

A total of 150,000 metric tons of winter herring was landed in the first week of Norway's winter herring fishing season. This compared with 40,000 tons in the same period of the 1964 season. About 120,000 tons of the new season catch went to the fish oil and meal industry.

Predictions made by the Norwegian Fish Research Organization for the 1965 winter herring fisheries have so far been very accurate. Extensive shoals of herring approached the Norwegian coast at the time and at the points expected (the Kristiansund area and the Lofoten area). For the whole winter herring season the catch was originally forecast at 400,000 tons, or 25 percent more than in 1964. From the results of the first week of fishing, that estimate may be on the low side unless weather conditions cut down fishing. (United States Embassy, Oslo, March 1, 1965.)

* * * * *

EXPORT VALUE OF FISHERY PRODUCTS AND BYPRODUCTS AT RECORD HIGH IN 1964:

The value of Norwegian exports of fishery products in 1964 was at a record 1,094 million kroner (US\$154 million), an increase of 10 percent from the previous year although the quantity exported was less, according to a report from Norway's Central Bureau of Statistics.

There were considerable shifts in the quantity distribution among the various groups of products, which reflected the varying yields of Norway's different fisheries. The large catches of herring in the North Sea and in Northern Norway resulted in an increase of 78 percent in quantity and 86.7 percent in value for exports of herring meal. There was

a similar increase in quantity and value for exports of fish meal processed from other species of fish.



Fig. 1 - The harbor in Bergen, one of Norway's important fishing ports.

The 1964 exports of other herring products were below the previous year indicating Norway's difficulty in holding on to traditional markets for fresh and salted herring. This may be partly explained by the failure for several years in succession to fill orders received in advance. But herring catches were then small and the demand could not be met.

The lower 1964 Norwegian exports of stockfish and klipfish were attributed to marketing difficulties. Exports of stockfish in 1964 totaled 23,431 metric tons, a decrease of 21.6 percent, while exports of klipfish dropped by 13.2 percent to 26,484 tons.



Fig. 2 - Klipfish carefully stacked for drying in the sun.

The most significant development in Norway's export trade has been the virtually complete collapse in the sale of Norwegian products to the Brazilian market. Despite protests from the Norwegian authorities against what they consider discrimination against Norwegian products in favor of Dan-

Norway (Contd.):

ish exports, it has not been possible to reach a solution.

The difficulties started in the late 1950's when Norway followed a request from the United Nations Economic Council and the World Bank and relinquished its bilateral trade agreement with Brazil to use a clearing basis for further trade with the country. Denmark did not take the same action and continued to trade with Brazil on a barter basis. As economic difficulties in Brazil increased and the reserves of foreign exchange dwindled, Norwegian products were included in the gradually tightening restrictions placed on the use of foreign currency for imports. Meanwhile, Danish exports were able to continue fairly steady because of the bilateral trade agreement. During 1964 this led to a virtual stop in Norwegian exports to Brazil, and although diplomatic negotiations with Brazilian authorities showed some promise, that problem has not yet been solved.

Norway's 1964 exports under the product group "fresh, frozen, salted or smoked fish, crustacea and molluscs" valued at 645.5 million kroner (\$90 million) decreased 2.2 percent. In this case the decrease resulted from the failure of the cod fisheries at Lofoten and on the coast of Finnmark. This was serious enough to offset the 1964 record catch of coal-fish.

The lack of raw materials is also the reason why the substantial expansion for exports of frozen fillets of the previous several years did not continue in 1964. The volume of exports did increase by 3.8 percent, but that increase was considered negligible compared to the almost explosive developments in that industry. In 1963, exports of frozen fillets increased 20 percent from the previous year. That segment of the fisheries industry has become increasingly important to the entire Norwegian economy, and particularly to the economy of northern Norway. Along the coast of that Arctic part of the country the fisheries are by far the most important source of income with many towns and townships built around the only factory there--the fish-freezer plant.

The development of Norway's frozen fish industry is considered particularly important, with the availability of raw materials the only

limitation for further expansion in that field. (The Export Council of Norway, Oslo.)

EXPORTS OF CANNED FISHERY PRODUCTS, JANUARY-SEPTEMBER 1964:

Norway's leading canned fish export items in January-September 1964 were smoked small sild in oil and smoked brisling in oil.

Table 1 - Norwegian Exports of Canned Fishery Products by Type, January-September 1964

| Products | January-September 1964 | | |
|--------------------------------------|------------------------|---------|--------|
| | Quantity | Value | |
| | | Kr. | US\$ |
| | Metric Tons | 1,000 | 1,000 |
| Smoked brisling in oil | 4,119 | 27,455 | 3,834 |
| Smoked brisling in tomato | 840 | 4,580 | 640 |
| Smoked small sild in oil | 7,468 | 31,464 | 4,394 |
| Smoked small sild in tomato | 1,654 | 5,813 | 812 |
| Unsmoked small sild in oil | 279 | 948 | 132 |
| Small sild packed otherwise | 318 | 1,155 | 161 |
| Kipperd herring (Kippen) | 2,462 | 10,772 | 1,505 |
| Mackerel | 541 | 2,495 | 349 |
| Roe, unclassified | 1,117 | 4,607 | 643 |
| Soft herring roe | 1,073 | 5,271 | 736 |
| Fish balls | 392 | 1,010 | 141 |
| Other canned fish | 73 | 523 | 73 |
| Shellfish | 1,247 | 12,889 | 1,800 |
| Total | 21,583 | 108,982 | 15,220 |

Table 2 - Norwegian Exports of Canned Fishery Products/ by Country of Destination, January-September 1964

| Country of Destination | January-September 1964 | | |
|---------------------------------|------------------------|--------|--------|
| | Quantity | Value | |
| | | Kr. | US\$ |
| | Metric Tons | 1,000 | 1,000 |
| Finland | 206 | 1,079 | 151 |
| Sweden | 627 | 2,867 | 400 |
| Belgium-Luxembourg | 500 | 2,403 | 336 |
| Ireland | 226 | 892 | 125 |
| France | 208 | 835 | 117 |
| Netherlands | 134 | 483 | 67 |
| United Kingdom | 5,182 | 24,767 | 3,459 |
| West Germany | 569 | 2,123 | 296 |
| Czechoslovakia | 1,089 | 3,870 | 540 |
| South Africa Republic | 1,347 | 5,357 | 748 |
| Iraq | 74 | 280 | 39 |
| Japan | 10 | 48 | 7 |
| Canada | 635 | 3,912 | 546 |
| United States | 7,106 | 38,352 | 5,356 |
| Australia | 1,232 | 5,102 | 713 |
| New Zealand | 363 | 1,570 | 219 |
| Other countries | 1,420 | 5,274 | 737 |
| Total ^{2/} | 20,928 | 99,214 | 13,856 |

1/Does not include exports of canned shellfish.

2/Totals are slightly larger than the combined exports of canned fish (excluding shellfish) shown in table 1.

Note: Norwegian kroner 7.16 equals US\$1.00.

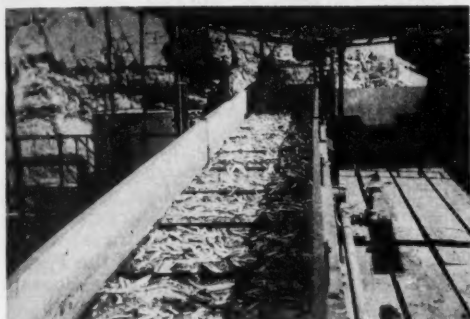
The United States and the United Kingdom were the leading buyers of Norwegian canned fishery products. (Norwegian Canners Export Journal, January 1965.)

Note: See Commercial Fisheries Review, Feb. 1965 p. 76.

Peru

FISH MEAL PRODUCTION IN 1965
MAY BE CURTAILED BY CONSERVATION
MEASURES AND LABOR DISPUTE:

The Peruvian Government, with the support of the fish reduction industry, has decreed that the month of August 1965 will be closed to anchoveta fishing along the entire coast. Government officials and the industry apparently agree with the conclusion of the Peruvian Marine Institute that a reduction in fishing pressure is necessary to sustain an adequate brood stock.



Anchovetas being transported into plant by conveyor belt at Chimbote.

The Institute is uncertain whether the reduced supply of anchoveta is a result of oceanographic and biological factors, or is due to overfishing. But the Institute concludes, in a recently published report, that the industry's installed fish-catching and meal-producing capacity is greater than can be sustained by the present level of anchoveta stocks. Under the circumstances, the Institute believes that fishing pressure should be limited so that the total anchoveta catch does not go beyond that of 1964 and should preferably be closer to that of 1963 when about 7 million metric tons of raw fish were taken.

Closing the fishery during the seasonably slow month of August is not likely to cut total output more than 3 or 4 percent. The real significance of the regulation lies in the fact that the Government and the industry have accepted the need for some action to conserve the anchoveta resource.

(Editor's Note: Of more immediate impact is the decline in output caused by the labor dispute in northern Peru during February 1965. A report in Oil World Weekly,

February 19, 1965, stated that Peruvian fish meal production in February 1965 might amount to only 60,000 to 80,000 metric tons, as compared with 125,000 tons in the same month of 1964.)

Peruvian fish meal production for 1965 cannot be accurately predicted at this point. It is expected, however, that output in Peru this year will at least match 1963 output of 1 million tons but a repeat of the 1964 performance, when over 1.5 million tons of meal were produced, is unlikely. (United States Embassy, Lima, Feb. 28 1965.)



Poland

NORTH SEA 1964 HERRING
SEASON PROFITABLE:

Poland's 1964 herring fishing season in the North Sea grounds was considered exceptionally good. Daily catches were as high as 54 metric tons per vessel. (Polish Maritime News, No. 75, November 1964.)

TRAWLER FISHES GEORGES
BANK FOR HAKE:

A Polish freezer trawler fished Georges Bank in the Northwest Atlantic for the first time in October 1964 when operations were confined to fishing for hake. The crew was assisted by fishermen from Soviet vessels who were acquainted with the area and showed the Polish fishermen how to operate their trawls. (Polish Maritime News, No. 75, November 1964.)

NORTH SEA AND NORTHWEST
ATLANTIC FISHERIES, 1964:

As of mid-October 1964, a 40 vessel fishing fleet out of Gdynia, operating in the North Sea and Northwest Atlantic, caught a total of 64,000 metric tons of fish. This compares with 53,000 tons caught by the same fleet during all of 1963.

Polish freezer trawlers fishing on the Newfoundland and Labrador grounds call at the Port of Ostend, Belgium, on their return trip and sell part of their frozen cod fillets there. (Polish Maritime News, No. 75, November 1964.)

Poland (Contd.):

**POLISH FISH-FREEZING BASE
ESTABLISHED AT OSTEND (BELGIUM):**

A seasonal land base to freeze fresh herring landed by Polish trawlers was established at the Port of Ostend, Belgium, in late 1964. It was expected that by the end of 1964, about 400 metric tons of herring from the North Sea would be frozen there. The frozen herring when returned to Poland was to be used for canning. (*Polish Maritime News*, No. 75, November 1964.)

**THREE NEW FISHERY
MOTHERSHIPS TO BE BUILT:**

A contract for building 3 new motherships for Polish fishing fleets was negotiated in September 1964, between a Gdansk shipyard and the Polish organization "Deep-Sea Fishing Motherships" of Szczecin. The contract calls for the first vessel to be delivered in 1966, the second in 1967, and the third in 1970. They will be of the B-67 class, with the keel of the first vessel scheduled to be laid in April 1965.

Motherships built for Polish fishing fleets will be of the same basic dimensions as those built for the Soviet fisheries--9,200 tons deadweight, 13,600 gross tons, overall length of more than 538 feet, and draft of 25.6 feet. They will be propelled by 7,200 hp. engines for a speed of 15.5 knots, and will be adapted to requirements of the Polish fisheries. Equipment aboard the vessels will include 5 processing lines for preparing fish for freezing, for producing fish meal, cod-liver oil, and icemaking.

Plans are for the new motherships to operate in fishing grounds in the Central and North Atlantic, areas not previously fished by Polish vessels. (*Polish Maritime News*, No. 75, November 1964.)

**Portugal****NEW LISBON FISH MARKET:**

February 1965 marked the opening of an auction center at Lisbon's new dockside fish market. Total cost of the entire Lisbon fish market complex when completed will be about US\$7.7 million.

The market will cover an area of some 15,000 square meters (17,940 square yards), almost half of which will be used for the unloading, sale, and distribution of fish. The new market will have the capacity to handle a daily volume of 600 metric tons of fish which is more than double the largest catches heretofore delivered to Lisbon. Under construction at the new market are a freezing and cold-storage plant, administration buildings, pier improvements, and a fuel supply area. (United States Embassy, Lisbon, February 13, 1965.)

**Sierra Leone****TERRITORIAL WATERS
EXTENDED TO 12 MILES:**

Effective January 14, 1965, Sierra Leone on the West African coast extended her territorial waters to 12 nautical miles measured from the low-water mark of the Sierra Leone coast. The claim to extended territorial waters was stated in "An Act to Amend the Fisheries Act" passed by the Sierra Leone House of Representatives November 27, 1964, and published in the *Supplement to the Sierra Leone Gazette*, Vol. XCVI, No. 4, January 14, 1965. (United States Embassy, Freetown, March 4, 1965.)

**Somali Republic****JOINT UNITED STATES-SOMALI
FISHERIES VENTURE EXTENDED
RISK AND EQUITY GUARANTY BY AID:**

A loan of about \$600,000 to the joint United States-Somali fishery firm in the Somali Republic, approved by the U. S. Agency for International Development (AID) in late 1964, is the first direct AID loan made to a private borrower in the country. AID also issued to the company the first extended risk guaranty to be provided outside Latin America, and the first equity guaranty to be issued anywhere.

The investment guaranty, under AID's extended risk program, insures the company for 50 percent of the equity investment of the United States firm against any risks, not to exceed \$111,161. The loan is repayable in United States dollars within 15 years, including a three-year grace period.

Somali Republic (Contd.):

The loan will finance purchases of United States equipment needed to build the first fish-freezing plant in the Somali Republic (near Alula at Ros Filuch). Most of the fishery products processed at the plant will be marketed in Italy through a New York fishery marketing firm.

The United States-affiliated company will benefit from the Development Loan Section services set up with AID assistance in Credito Somalo, an autonomous bank of the Somali Government. Credito Somalo has loaned the company \$500,000, using a portion of an earlier United States loan to the bank to help provide risk capital for private business in the Somali Republic. The United States counterpart of the jointly-owned firm has contributed \$222,322 in equity and the Somali partners were to contribute an equal amount in Somali shillings. Financing, including the equity, the Credito Somalo loan, and the AID loan, total the equivalent of \$1.5 million.

AID has provided technical assistance to the Somali fishing industry and promoted a joint United States-Somali fishing venture for a number of years. Credito Somalo also has helped in the promotion, assisted by United States technical advisors made available by AID. (International Commerce, vol. 71, no. 11, March 15, 1965.)

Note: See Commercial Fisheries Review, January 1965 p. 86.



South Africa Republic

PELAGIC SHOAL FISH CATCH, JANUARY-OCTOBER 1964:

The combined pelagic shoal fish catch in the South Africa Republic and Territory of South-West Africa in January-October 1964 totaled a record 1,143,265 short tons (consisting of pilchards, maasbanker, mackerel, and anchovy).

South Africa Republic: In October 1964, a catch of 27,235 tons of anchovy (the best in any single month since the commercial anchovy fishery was started in April 1964) raised the total catch for that species to 78,318 tons and the total catch for all pelagic shoal fish off the Cape in January-October 1964 to 440,398 tons.

South-West Africa: The October 1964 shoal fish catch for the few factories still to reach their quotas at Walvis Bay and Luderitz was 41,820 tons. This brought the total South-West African pelagic shoal catch in January-October 1964 to 702,867 tons. (South African Shipping News and Fishing Industry Review, December 1964.)



Sweden

PACKAGED FROZEN FISH MARKET TRENDS:

Fish is the most popular packaged frozen food product sold in Sweden, and on a per capita basis the Swedes are the leading European consumers of packaged frozen food.

Swedish consumption of packaged frozen fishery products amounted to 10,543 metric tons in 1962 and 11,980 metric tons in 1963, most of which was cod. Sales of frozen cod on the Swedish market in 1963 amounted to about 8,000 tons and accounted for almost 20 percent of overall packaged frozen food sales in Sweden. Imports--mostly from Norway and Denmark--probably accounted for about half of the frozen cod sales in Sweden in 1963.

In Sweden, consumer packs of raw frozen fish fillets are usually marketed in packages of 1-pound or 10-ounce size (approximately); institutional packs range up to 10 pounds.

Although cod products are dominant, a wide variety of other packaged frozen fishery products are sold in Sweden; at least 20 different species are marketed and over 100 different packs are offered. Freeze-dried shrimp are now being produced by one Swedish firm on a small scale, according to reports.

Precooked frozen fish is of growing importance in Sweden both as an individual item and as an element in precooked dinners. Cod is the principal species used in precooked dishes such as baked fish and potatoes, minced fish fingers, and rissoles. Haddock is used for precooked fish balls and fish soufflé.

The fast-growing Swedish market for frozen food products of all kinds should continue to expand for a number of years. (The Swedish per capita consumption of packaged frozen

Sweden (Contd.):

food products is still only about 27 percent of that in the United States.) Consumption of packaged frozen fishery products should increase in Sweden, but--since frozen fish is already in a dominant position--the future emphasis in the Swedish market may be on developing other frozen food products.

Sweden imposes an import duty of about 9 U. S. cents a kilo (about 4.1 cents a pound) on frozen fish from countries outside the European Free Trade Association (EFTA). The frozen fish import duty is reduced by 50 percent on shipments from EFTA countries. Sweden also imposes a "price regulation" tax of 3 percent of the purchase value on all imported fishery products. The "price regulation" tax is thought to apply regardless of the country of origin. (Foreign Trade, Canadian Department of Trade and Commerce, March 20, 1965.)

Note: See Commercial Fisheries Review, February 1964 p. 81.



United Kingdom

DEMAND INCREASES FOR FROZEN FISHERY PRODUCTS:

Frozen fish production in Great Britain in 1963 increased only 1 percent from the previous year as against a 17-percent increase in demand. But for the first time the production of consumer-packaged frozen fishery products in 1963 exceeded production of institutional-packed fish. The consumer demand for frozen fishery products in Great Britain continues strong and frozen fish production is expected to increase. This is especially evident as more of the large British freezer



Fish frozen at sea in blocks of 100 pounds are thawed out in a thawing plant at Grimsby prior to filleting.

trawler-owned groups enter the market with their own brands.

The trend toward freezing fish at sea has raised some speculation about the future of the major British trawling ports of Hull, Grimsby, and Fleetwood. It was questioned whether those ports can handle the influx of frozen fish landed with the facilities they now have. Another question was whether dock workers could adapt to the completely different methods required for unloading frozen fish as compared with the more suitable dock facilities at commercial ports such as Southampton. (United States Embassy, London, March 11, 1965.)

TRADE WITH UNITED STATES IN FISHERY PRODUCTS, 1963:

Total United Kingdom purchases of fishery products from the United States in 1963 amounted to 4,200 long tons as compared with 17,500 tons in 1962. The value dropped by US\$616,000 to \$6.7 million. But more salmon (fresh, chilled, and frozen) was purchased from the United States during the year, accounting for a 500-percent increase over 1962.

The potential market in the United Kingdom for fishery products from the United States is limited to specialty items such as salmon and freeze-dried shrimp. Supplies in the United Kingdom of live eels have been short in recent months and British firms have looked to United States producers for supplies. (United States Embassy, London, March 11, 1965.)

FISH MEAL PRODUCTION, 1964:

Fish meal production in the United Kingdom in 1964 totaled 78,000 long tons compared with 74,000 tons in 1963, according to the British Ministry of Agriculture, Fisheries, and Food. Fish meal in the United Kingdom is produced from groundfish and herring. (Foreign Agriculture, March 8, 1965, U. S. Department of Agriculture.)

IMPORT SURCHARGE ON INDUSTRIAL GOODS REDUCED:

The British Chancellor of the Exchequer announced February 22, 1965, that the British Government would cut the temporary import ad valorem surcharge on industrial goods to

United Kingdom (Contd.):

10 percent as of April 26, 1965. A rate of 15 percent had been in effect since the temporary surcharge was established October 27, 1964.

Announcing the reduction to the British House of Commons, the Chancellor of the Exchequer said, "We have now decided that enough progress is being made to enable us to reduce the charge after it has been in operation for 6 months..." The Chancellor said that the remaining 10 percent will be kept "under review." (*EFTA Reporter*, February 22, 1965.)

(Editor's Note: Fish and fish preparations are exempt from the import surcharge. Also excluded from the surcharge are fishing vessels of 80 gross tons or more and fishing vessels of the kind commonly known as Danish-type seiners.)

Note: See *Commercial Fisheries Review*, January 1965 p. 95.

FREEZER-TRAWLER "CAPE KENNEDY" ENTERS SERVICE:

The Cape Kennedy, a 227-foot stern trawler designed to freeze fish at sea, entered service in March 1965 for a large British fishing company, joining her sistership, the Ross Valiant, which began operating in the summer of 1964.

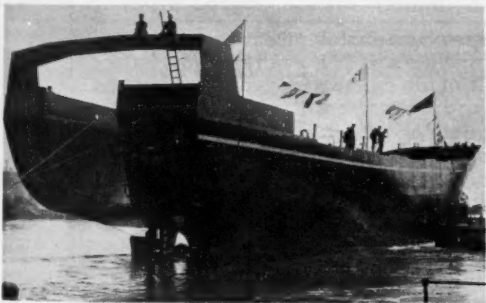


Fig. 1 - Stern view of Cape Kennedy showing stern ramp. Taken after launching in 1964.

Like her sistership, the Cape Kennedy will carry a crew of 26 and have a storage capacity for about 400 tons of frozen fish. However, to increase efficiency, some changes were made in the Cape Kennedy, including modifications in unloading equipment.

Fish-processing machinery is housed between decks on the Cape Kennedy while the engines and main tanks are below the lower deck.

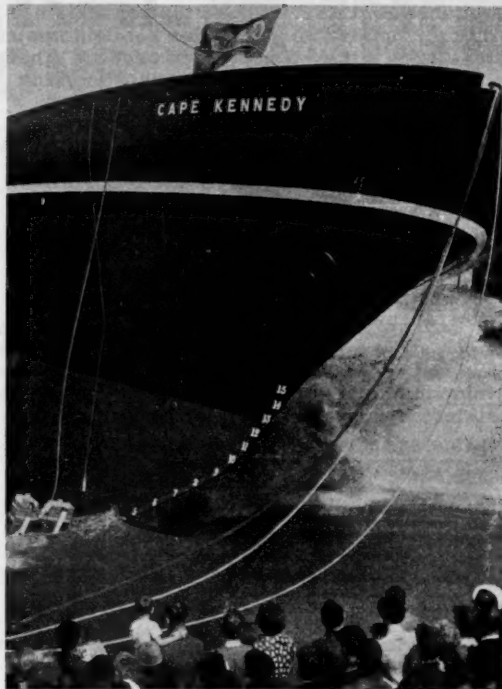


Fig. 2 - Bow view of Cape Kennedy during launching ceremony in 1964.

Two tall gantries which span the vessel are used to work the fishing gear. The mid-ship gantry is used for handling the net on the upper deck, while the after one at the head of the stern ramp lifts the cod end and spills the catch through a hatch to the fish-processing deck below.

After gutting and washing, the fish are taken by conveyor belts to plate freezers where they are frozen into 100-pound blocks. (The vessel is equipped with 10 plate freezers, each of which can freeze about $3\frac{1}{2}$ tons of fish a day.) After freezing, the fish blocks are "posted" through slots in the deck to the fish room below which can be maintained at -20°F .

The British firm operating the Cape Kennedy and Ross Valiant has reported plans to

United Kingdom (Contd.):

order a number of other freezer-stern trawlers as replacements for its fleet of distant-water trawlers. For the near- and middle-distance British fisheries, the same firm is pioneering the use of smaller semiautomated trawlers (with 5- and 10-men crews). Those smaller stern trawlers make shorter trips and store their catch in ice.

Note: See Commercial Fisheries Review, March 1965 p. 94; Sept. 1964 p. 98; July 1964 p. 79, April 1964 p. 76; and Sept. 1963 p. 92.



Yemen

FISHERIES TRENDS, 1964:

Change may soon come to the modest fisheries of Yemen, which borders on the Red Sea and has access to the Indian Ocean. The development of Yemen's fisheries is one of the stated objectives of Soviet assistance to Ye-

men. (A Soviet-Yemen loan agreement for 65 million rubles was announced in March 1964.) The assistance program may provide a Soviet-built fish processing and freezing plant in Hodeida, the leading fishing port of Yemen. That project coupled with the acquisition of several modern fishing vessels could revolutionize the traditional fisheries of Yemen.

Meanwhile, there was little change during 1964 in the actual operation of Yemen's rather primitive fisheries. The demand for fish in the coastal area continued to support a fleet of small fishing boats. There were about 1,000 fishermen in Hodeida, which was more than in all the other fishing ports combined. Fish preservation was mainly limited to drying and most of the catch was sold in coastal ports, with only a small portion going to the inland area to Aden. (United States Embassy, Taiz, March 10, 1965.)

Note: See Commercial Fisheries Review, Dec. 1961 p. 91.



TUNA RECIPE FOR TEEN-AGE COOKS

The Tuna Research Foundation has come up with a grand recipe for the teen-age cook. It features canned tuna in zingy individual spaghetti casseroles that are a snap to fix.

Even a beginning teen cook can fix up these casseroles. Convenient canned tuna needs no more than a twist of the can opener and it's ready to go. Packaged spaghetti dinner provides the other half of the casserole recipe. Chopped olives add a touch of contrasting color.


Keep the ingredients for Tuna Teen Casseroles on your pantry shelf and the recipe tacked up on the door. Then, if you're delayed while shopping, daughter (or son) can save the day at home.

TEEN'S TUNA CASSEROLE


1 package complete spaghetti dinner with mushrooms
(package thin spaghetti, can tomato and mushroom
sauce, can grated cheese)

1 can (6 $\frac{1}{2}$ or 7 ounces) tuna in vegetable oil
 $\frac{1}{2}$ cup chopped pimiento stuffed olives

Cook spaghetti according to package directions. Drain. Open can of spaghetti sauce with mushrooms; add tuna with oil, and chopped olives. Add to drained spaghetti and mix well. Divide among 4 individual casserole dishes. Open can of grated cheese and sprinkle over top of each casserole. Bake in 375° F. oven 15 minutes. Makes 4 servings.



FEDERAL ACTIONS



Department of Commerce

AREA REDEVELOPMENT ADMINISTRATION

INDUSTRIAL AND COMMERCIAL LOANS TO FISHERIES FIRMS AS OF JUNE 30, 1964:

Following is a summary of industrial and commercial loans to fisheries firms by the Area Redevelopment Administration (ARA) as of June 30, 1964:

and frozen raw lightly breaded shrimp (as an addition to Title 21, Code of Federal Regulations, Part 36) was published in the Federal Register, March 5, 1965, by the U. S. Food and Drug Administration. (The order results in the adoption of proposed findings of fact, conclusions, and a tentative order published in the Federal Register, December 22, 1964.)

Effective date for the order establishing definitions and standards of identity for fro-

| Firm | Location | Main Products or Services | ARA Assistance |
|-------------------------|--------------------|------------------------------|----------------|
| Alaska Ice & Storage | Kodiak, Alaska | Crab and shrimp | \$260,000 |
| Northwest Oyster Farms | Nahcotta, Wash. | Oysters | 110,000 |
| Florida Seafood Canning | Apalachicola, Fla. | Fish | 756,294 |
| Farwest Fisheries | Anacortes, Wash. | Tuna | 355,000 |
| Chesapeake Clam Chip | Cambridge, Md. | Clam chips | 213,200 |
| Callao Foods | Callao, Va. | Canned herring, roe, catfood | 29,900 |
| Custom Pet Food Packers | Princess Anne, Md. | Pet food | 461,500 |
| Alvine's Marine Repair | Kodiak, Alaska | Vessel repair | 86,665 |
| Woods Hawkeye Lodge | Compti, La. | Fishing resort | 48,750 |

Note: ARA industrial loans to fisheries firms approved after June 30, 1964, include a \$654,576 loan to help Peter Pan Caribe, Inc., establish a tuna processing, canning, and distribution facility in Ponce, Puerto Rico (announced August 17, 1964); and a \$130,000 loan to help Peninsula Processing Company, Inc., establish a plant in the Sturgeon Bay, Wis., area to process trash fish into meal, solubles, and oil (announced August 19, 1964).

In addition to benefits from ARA industrial loans, the United States fishing industry has also been aided by a number of ARA technical assistance studies and public facilities grants. (More Jobs Where Most Needed, Annual Report of the ARA, 1964.)



Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

DEFINITIONS AND STANDARDS OF IDENTITY FOR FROZEN BREADED SHRIMP:

An order establishing definitions and standards of identity for frozen raw breaded shrimp

zen raw breaded shrimp and frozen raw lightly breaded shrimp is June 3, 1965, with one single exception (the exception concerns labeling requirements for optional ingredients used in batter and breading).

The order states that "frozen raw breaded shrimp" shall contain not less than 50 percent shrimp material, and "frozen raw lightly breaded shrimp" shall contain not less than 65 percent shrimp material.

The term "shrimp" is said to mean the tail portion of properly prepared shrimp of commercial species. The optional forms of shrimp which may be processed in the breaded and lightly breaded categories are: (1) fantail or butterfly; (2) butterfly, tail off; (3) round; (4) round, tail off; (5) pieces; and (6) composite units. Detailed specifications for each optional

form are included in the standard. Batter and breading ingredients are also defined.

The labeling requirements of the standards of identity state that the label shall name the food, as prepared from each of the optional forms of shrimp specified. (For example, "Breaded fantail shrimp," "Breaded butterfly shrimp, tail off," etc.) The word "prawns" may be added in parentheses immediately after the word "shrimp" if the shrimp are of large size. If the shrimp are from a single geographic area the adjectival designation of that area may appear as part of the name; for example, "Breaded Alaskan shrimp sticks."

The labeling requirements state that the optional ingredients used in batter and breading (as specified in the standard of identity) "shall be listed on the principal display panel or panels of the label with such prominence and conspicuousness as to render them likely to be read and understood by the ordinary individual under customary conditions of purchase" An exception from the general effective date is provided for the labeling requirements covering optional ingredients in batter and breading. The order states: "Subject to the condition that the labels used name the optional ingredients, the provision in Sec. 36.30(f) requiring that these names are to be listed on the principal display panel or panels shall not become effective until December 31, 1965."

The standards of identity define methods of determining the percentage of shrimp material in breaded shrimp. The method provided to determine the shrimp content of composite breaded shrimp products (shrimp "logs" or "sticks," for example) is the same as that prescribed in the United States Standards for Grades of Frozen Raw Breaded Fish Portions (50 CFR 266.21 f) published by the U. S. Bureau of Commercial Fisheries. That method provides no correction factor, i.e., the product must contain the required amount of shrimp.

For breaded shrimp products other than composite forms, the Food and Drug Administration prescribes a separate method of determining shrimp content which allows a correction factor of 2 percent.

(The United States Standards for Grades of Frozen Raw Breaded Shrimp issued by the U. S. Bureau of Commercial Fisheries are being revised to reflect the Food and Drug Administration provisions in their standards of identity.)

Following is the order establishing definitions and standards of identity for frozen raw breaded shrimp and frozen raw lightly breaded shrimp as published in the Federal Register, March 5, 1965:

Title 21—FOOD AND DRUGS

Chapter I—Food and Drug Administration, Department of Health, Education, and Welfare

SUBCHAPTER E—FOOD AND FOOD PRODUCTS

[Docket No. FDC-78]

PART 36—SHELLFISH

Frozen Raw Breaded and Lightly Breaded Shrimp; Definitions and Standards of Identity

§ 36.30 Frozen raw breaded shrimp; identity; label statement of optional ingredients.

(a) Frozen raw breaded shrimp is the food prepared by coating one of the optional forms of shrimp specified in paragraph (c) of this section with safe and suitable batter and breading ingredients as provided in paragraph (d) of this section. The food is frozen.

(b) The food tests not less than 50 percent of shrimp material as determined by the method prescribed in paragraph (g) of this section, except that if the shrimp are composite units the method prescribed in paragraph (h) of this section is used.

(c) The term "shrimp" means the tail portion of properly prepared shrimp of commercial species. Except for com-

posite units, each shrimp unit is individually coated. The optional forms of shrimp are:

(1) Fantail or butterfly: Prepared by splitting the shrimp; the shrimp are peeled, except that tail fins remain attached and the shell segment immediately adjacent to the tail fins may be left attached.

(2) Butterfly, tail off: Prepared by splitting the shrimp; tail fins and all shell segments are removed.

(3) Round: Round shrimp, not split; the shrimp are peeled, except that tail fins remain attached and the shell segment immediately adjacent to the tail fins may be left attached.

(4) Round, tail off: Round shrimp, not split; tail fins and all shell segments are removed.

(5) Pieces: Each unit consists of a piece or a part of a shrimp; tail fins and all shell segments are removed.

(6) Composite units: Each unit consists of two or more whole shrimp or pieces of shrimp, or both, formed and pressed into composite units prior to coating; tail fins and all shell segments are removed; large composite units, prior to coating, may be cut into smaller units.

(d) The batter and breading ingredients referred to in paragraph (a) of this section are the fluid constituents and the solid constituents of the coating around the shrimp. These ingredients consist of suitable substances which are

not food additives as defined in section 201(a) of the Federal Food, Drug, and Cosmetic Act; or if they are food additives as so defined, they are used in conformity with regulations established pursuant to section 409 of the act. Batter and breading ingredients that perform a useful function are regarded as suitable, except that artificial flavorings, artificial sweeteners, artificial colors, and chemical preservatives, other than those provided for in this paragraph, are not suitable ingredients of frozen raw breaded shrimp. Chemical preservatives that are suitable are:

(1) Ascorbic acid, which may be used in a quantity sufficient to retard development of dark spots on the shrimp; and

(2) The antioxidant preservatives listed in § 121.101(d)(2) of this chapter that may be used to retard development of rancidity of the fat content of the food, in amounts within the limits prescribed by that section.

(e) The label shall name the food, as prepared from each of the optional forms of shrimp specified in paragraph (c) (1) to (6), inclusive, of this section, and following the numbered sequence of such subparagraph, as follows:

(1) "Breaded fantail shrimp." The word "butterfly" may be used in lieu of "fantail" in the name.

(2) "Breaded butterfly shrimp, tail off."

- (3) "Breaded round shrimp."
- (4) "Breaded shrimp, tail off."
- (5) "Breaded shrimp pieces."
- (6) Composite units:

(i) If the composite units are in a shape similar to that of breaded fish sticks the name is "Breaded shrimp sticks"; if they are in the shape of meat cutlets, the name is "Breaded shrimp cutlets."

(ii) If prepared in a shape other than that of sticks or cutlets, the name is "Breaded shrimp - - - - -," the blank to be filled in with the word or phrase that accurately describes the shape, but which is not misleading.

In the case of the names specified in subparagraphs (1) through (5) of this paragraph, the words in each name may be arranged in any order, provided they are so arranged as to be accurately descriptive of the food. The word "prawns" may be added in parentheses immediately after the word "shrimp" in the name of the food if the shrimp are of large size; for example, "Fantail breaded shrimp (prawns)." If the shrimp are from a single geographic area, the adjectival designation of that area may appear as part of the name; for example, "Breaded Alaskan shrimp sticks."

(f) The names of the optional ingredients used, as provided for in paragraph (d) of this section, shall be listed on the principal display panel or panels of the label with such prominence and conspicuousness as to render them likely to be read and understood by the ordinary individual under customary conditions of purchase. If a spice that also imparts color is used, it shall be designated as "spice and coloring," unless the spice is designated by its specific name. If ascorbic acid is used to retard development of dark spots on the shrimp, it shall be designated as "Ascorbic acid added as a preservative" or "Ascorbic acid added to retard discoloration of shrimp." If any other antioxidant preservative, as provided in paragraph (d) of this section, is used, such preservative shall be designated by its common name followed by the statement "Added as a preservative."

(g) The method for determining percentage of shrimp material for those forms specified in paragraph (c) (1) through (5) of this section is as follows:

- (i) *Equipment needed.* (1) Two-gallon container, approximately 9 inches in diameter.
- (ii) Two-varied wooden paddle, each vane measuring approximately 1 3/4 inches by 3 3/4 inches.
- (iii) Stirring device capable of rotating the wooden paddle at 120 r.p.m.
- (iv) Balance accurate to 0.01 ounce (or 0.1 gram).
- (v) U.S. Standard sieve No. 20, 12-inch diameter.¹

¹ The sieves shall comply with the specifications for wire cloth and sieve frames in "Standard Specifications for Sieves," published March 1, 1940, in L.C. 584 of the U.S. Department of Commerce, National Bureau of Standards.

- (vi) U.S. Standard sieve, 1/2-inch sieve opening, 12-inch diameter.¹
- (vii) Forceps, blunt points.
- (viii) Shallow baking pans.
- (ix) Rubber-tipped glass stirring rod.

(2) *Procedure.* (i) Weigh the sample to be debreaded. Fill the container three-fourths full of water at 70° F.-80° F. Suspend the paddle in the container, leaving a clearance of at least 5 inches below the paddle vanes, and adjust speed to 120 r.p.m. Add shrimp and stir for 10 minutes. Stack the sieves, the 1/2-inch mesh over the No. 20, and pour the contents of the container onto them. Set the sieves under a faucet, preferably with spray attached, and rinse shrimp with no rubbing of flesh, being careful to keep all rinsings over the sieves and not having the stream of water hit the shrimp on the sieve directly. Lay the shrimp out singly on the sieve as rinsed. Inspect each shrimp and use the rubber-tipped rod and the spray to remove the breading material that may remain on any of them, being careful to avoid undue pressure or rubbing, and return each shrimp to the sieve. Remove the top sieve and drain on a slope for 2 minutes, then remove the shrimp to weighing pan. Rinse contents of the No. 20 sieve onto a flat pan and collect any particles other than breading (i.e., flesh

main until the breading becomes soft and can easily be removed from the still frozen shrimp material (between 10 seconds to 80 seconds for composite units held in storage at 0° F.). If the composite units were prepared using batters that are difficult to remove after one dipping, redip them for up to 5 seconds after the initial debreading and remove residual batter materials.

[Note: Several preliminary trials may be necessary to determine the exact dip time required for "debreading" the composite units in a sample. For these trials only, a saturated solution of copper sulfate (1 pound of copper sulfate in 2 liters of tap water) is necessary. The correct dip time is the minimum time of immersion in the copper sulfate solution required before the breading can easily be scraped off: Provided, That the "debreaded" units are still solidly frozen and only a slight trace of blue color is visible on the surface of the "debreaded" shrimp material.]

(iii) Remove the unit from the bath: blot lightly with double thickness of paper toweling; and scrape off or pick out coating from the shrimp material with the spatula or nut picker.

(iv) Weigh all the "debreaded" shrimp material.

(v) Calculate the percentage of shrimp material in the sample, using the following formula:

$$\text{Percent shrimp material} = \frac{\text{Weight of debreaded shrimp sample}}{\text{Weight of sample}} \times 100 + 3$$

and tail fins) and add to shrimp on balance pan and weigh.

(ii) Calculate percent shrimp material:

§ 36.31 Frozen raw lightly breaded shrimp; identity; label statement of optional ingredients.

Frozen raw lightly breaded shrimp complies with the provisions of § 36.30,

$$\text{Percent shrimp material} = \frac{\text{Weight of debreaded shrimp sample}}{\text{Weight of sample}} \times 100$$

(h) The method for determining percentage of shrimp material for composite units, specified in paragraph (c) (6) of this section, is as follows:

- (i) *Equipment needed.* (1) Water bath (for example a 3 liter to 4 liter beaker).
- (ii) Balance accurate to 0.1 gram.
- (iii) Clip tongs of wire, plastic, or glass.
- (iv) Stop-watch or regular watch readable to a second.
- (v) Paper towels.
- (vi) Spatula, 4-inch blade with rounded tip.
- (vii) Nut picker.
- (viii) Thermometer (immersion type) accurate to ±2° F.
- (ix) Copper sulfate crystals (CuSO₄ · 5H₂O).

(2) *Procedure.* (i) Weigh all composite units in the sample while they are still hard frozen.

(ii) Place each composite unit individually in a water bath that is maintained at 63° F.-86° F., and allow to re-

except that it contains not less than 65 percent of shrimp material, as determined by the method prescribed in § 36.30 (g) or (h), as appropriate, and that in the name prescribed the word "lightly" immediately precedes the words "breaded shrimp."

Effective date. With the exception hereinafter set out, this order shall become effective 90 days from the date of its publication in the *FEDERAL REGISTER*. Subject to the condition that the labels used name the optional ingredients, the provision in § 36.30(f) requiring that these names are to be listed on the principal display panel or panels shall not become effective until December 31, 1965.

(Secs. 401, 701(e), 82 Stat. 1046, 1055 as amended, 70 Stat. 919; 21 U.S.C. 341, 371(e))

Dated: February 26, 1965.

GEO. F. LARRICK,
Commissioner of Food and Drugs.

Note: See *Commercial Fisheries Review*, Feb. 1965 p. 85.

* * * * *

PUBLIC HEALTH SERVICE

MEDICAL CARE FOR OWNER-OPERATORS OF COMMERCIAL FISHING VESSELS:

Owner-operators of commercial fishing vessels have been declared eligible for certain medical care at U. S. Public Health Service hospitals, out-patient clinics, and other medical facilities. Eligibility for such care was stated in amendments to Part 32, Code of Federal Regulations, Title 42.

Title 42—PUBLIC HEALTH**Chapter I—Public Health Service, Department of Health, Education, and Welfare****PART 32—MEDICAL CARE FOR SEAMEN AND CERTAIN OTHER PERSONS****Owner-Operators of Commercial Fishing Vessels**

On November 10, 1964, notice of proposed rule making regarding the regulations under Part 32, relating to eligibility for medical care of owner-operators of commercial fishing vessels, was published in the *FEDERAL REGISTER* (29 F.R. 15174). After consideration of all such relevant matter as was presented by interested persons regarding the rules proposed, the regulations as so published are hereby adopted without change.

Date: January 27, 1965.

[SEAL] LUTHER L. TERRY,
Surgeon General

Approved: February 9, 1965.

ANTHONY J. CELEBREKKE,
Secretary.

Note: See *Commercial Fisheries Review*, Jan. 1965 p. 98.

The new regulations carry out *Public Law 88-424* (signed by the President August 13, 1964), which restored to self-employed fishermen certain medical benefits they enjoyed prior to 1954.

Following are the new regulations as adopted and published in the *Federal Register*, February 17, 1965, by the U. S. Public Health Service:

Part 32 is amended as follows:
1. Section 32.1 is amended by adding a new paragraph (1), to read as follows:
§ 32.1 Meaning of terms.

(1) "Commercial fishing operations" means the gathering of any form of either fresh water or marine animal life for sale on a commercial basis through available markets.

2. Section 32.6(a) is amended by adding a new subparagraph (12), to read as follows:

§ 32.6 Persons eligible.

(a) Under this part the following persons are entitled to care and treatment by the Service as hereinafter prescribed:

(12) Persons who own vessels registered, enrolled, or licensed under the maritime laws of the United States, who are engaged in commercial fishing operations, and who accompany such vessels on such fishing operations, and a substantial part of whose services in connection with such fishing operations are comparable to services performed by

seamen employed on such vessel or on vessels engaged in similar operations.

3. A new center heading and a new § 32.57 are added, to read as follows:

OWNER-OPERATORS OF COMMERCIAL FISHING VESSELS**§ 32.57 Conditions and extent of treatment.**

Persons who own vessels registered, enrolled, or licensed under the maritime laws of the United States, who are engaged in commercial fishing operations, and who accompany such vessels on such fishing operations, and a substantial part of whose services in connection with such fishing operations are comparable to services performed by seamen employed on such vessel or on vessels engaged in similar operations shall be entitled to care and treatment by the Service under the same conditions, where applicable, and to the same extent as is provided for American seamen.

(Sec. 215, 58 Stat. 690, as amended; 42 U.S.C. 216. Interpret or apply sec. 332, 58 Stat. 690, as amended by 76 Stat. 308; 42 U.S.C. 346)

**Department of the Interior****GUIDELINES DEVELOPED FOR TESTING PESTICIDES:**

Guidelines for testing the toxicity of new pesticides to fish and wildlife have been developed by the Department of the Interior, it was announced March 17, 1965. The recommended procedures stem from experiments conducted by Interior under its intensified program to safeguard those important resources from poisoning. Facts about toxicity are needed by manufacturers of pesticides to support their applications for Government registration of new pesticide compounds.

Evaluation procedures, developed by Interior in cooperation with the National Agricultural Chemical Association, are similar to

those used by research stations of the U. S. Bureau of Sport Fisheries and Wildlife and the Bureau of Commercial Fisheries. The procedures are intended to produce information on the lethal and sublethal toxicity of pesticides to a variety of animal, fish, and shellfish species. They are not considered to be the sole means of testing for toxicity.

The guidelines recommend procedures for obtaining data on:

1. Lethal and sublethal toxicity to mammals, required by the Departments of Agriculture and Health, Education, and Welfare.

2. Lethal toxicity to one species of waterfowl (mallard duck) and one of the follow-

ing: bobwhite quail, ring-neck pheasant or coturnix (Japanese quail).

3. Lethal toxicity data on rainbow trout as the representative of cold-water fish; and one of these warm-water fish: bluegill, goldfish, or channel catfish.

4. Sublethal toxicity on the eastern oyster as representative of the marine mollusks. Lethal tests cannot be made on the oyster because it closes its shell against a concentration of pesticides that would be fatal. The sublethal test shows the amount of reduction of shell growth caused by a pesticide.

The guidelines describe the feeding, housing, and temperature control for birds to be tested, the number of birds to be exposed to pesticides and their diets, and the periodic observations to be made. Similar recommendations are made for testing of fish.

The Department of the Interior said the Pesticides Review Staff of the Fish and Wildlife Service will assist manufacturers in evaluating any methods such producers devise to test pesticides.

* * * * *

REMOVAL OF CEILING ON PESTICIDE RESEARCH PROGRAM REQUESTED:

Congress has been asked for legislation which would remove the present ceiling placed on appropriations for pesticide research carried out by Federal agencies, announced the Department of Interior March 6, 1965. Secretary of the Interior Stewart L. Udall said the measure would implement President Johnson's request for increased research efforts to learn more about the effects of pesticides in the environment.

The research program which was authorized in 1958 directed the Secretary of the Interior to undertake a comprehensive study of the effects of pesticides on fish and wildlife. The following year Congress voted an annual appropriation of \$2,565,000 for Interior to carry out the work. This is the present ceiling on annual pesticide research appropriations.

In a message to Congress on February 8, 1965, President Johnson said, "I have asked the Secretary of the Interior to eliminate the ceiling on pesticide research." Under this ceiling, Interior's Fish and Wildlife Service is conducting studies of the toxic effects, both

acute and chronic, of pesticides on selected species of fish and wildlife. The Bureau of Sport Fisheries and Wildlife is developing techniques of discovering and measuring pesticide residues in the tissues and organs of fish and wildlife. It also is conducting field observations of the fish and wildlife environment before and after the spraying of pesticide chemicals.

Secretary Udall said that Bureau scientists have found residues of some common pesticides in fauna collected in nearly every part of the United States. Increased research is needed to learn more about the possible presence of many more pesticidal materials in fish and wildlife, and the effects the chemicals have on survival, reproduction and growth of fish and wildlife, he said. "The acute and chronic effects resulting from exposure to combinations of such toxic agents is likewise largely unknown, although related studies have shown that one chemical may heighten the effect of another," Secretary Udall added.

While some of the residue levels of pesticides are not considered dangerous to humans, they may be well above the levels tolerated by more sensitive forms of animal life, such as fish and shellfish, the Secretary explained. He said expanded research is needed to determine these effects, and where they are found to be harmful, to seek substitute methods of pest control that are more selective and do not persist in the environment for prolonged periods.

FISH AND WILDLIFE SERVICE

PROPOSED REVISED U. S. STANDARDS FOR GRADES OF FROZEN RAW BREADED SHRIMP:

Notice of a proposed revision of United States standards for grades of frozen raw breaded shrimp (as an amendment to Title 50, Code of Federal Regulations, Part 262) was published by the Secretary of the Interior in the Federal Register, March 18, 1965.

The proposed revision would upgrade the standards for frozen raw breaded shrimp grades, particularly as concerns: (1) uniformity, (2) condition of coating (batter and breading), and (3) quality loss in shrimp prior to processing. The evaluation factors for flavor and odor would also be upgraded.

Breeding levels for frozen raw breaded shrimp are specified in Sec. 262.2 of the proposed revised grade standards as follows:

(a) Style I. "Regular Breaded Shrimp" are frozen raw breaded shrimp containing a minimum of 50 percent of shrimp material.

(b) Style II. "Lightly Breaded Shrimp" are frozen raw breaded shrimp containing a minimum of 65 percent of shrimp material.

(Those breeding levels correspond, respectively, with those in the standards of identity for "frozen raw breaded shrimp" and "frozen raw lightly breaded shrimp" published by the U. S. Food and Drug Administration in the

Federal Register, March 5, 1965, to become effective June 3, 1965.)

Interested persons were given the opportunity to submit written comments, suggestions, or objections concerning the proposed revised standards by April 17, 1965, with the Director, Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Washington, D. C. 20240.

Following are the proposed revised standards for grades of frozen raw breaded shrimp as published in the Federal Register, March 18, 1965:

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service
[50 CFR Part 262]

FROZEN RAW BREADED SHRIMP Proposed Standards for Grades

MARCH 11, 1965.

Notice is hereby given that pursuant to sections 203 and 205 of Title II of the Agricultural Marketing Act of 1946, 60 Stat. 1087, 1090, as amended, 7 U.S.C. sections 1622 and 1624 (1958), as transferred to the Department of the Interior by section 6(a) of the Fish and Wildlife Act of 1956, 70 Stat. 1122 (1956), 16 U.S.C. section 742e (1958), the Secretary of the Interior proposes to amend Title 50, Code of Federal Regulations so as to provide for the upgrading of frozen raw breaded shrimp standards for grades as set forth in the following proposed regulations.

It is the policy of the Department of the Interior whenever practicable, to afford the public an opportunity to participate in the rule making process. Accordingly, interested persons may submit written comments, suggestions, or objections with respect to the proposed amendment to the Director, Bureau of Commercial Fisheries, U.S. Fish and Wildlife Service, Washington, D.C. 20240, within 30 days of the date of publication of this notice in the FEDERAL REGISTER.

JOHN A. CARVER, Jr.,
Under Secretary of the Interior.

PART 262—UNITED STATES STANDARDS FOR GRADES OF FROZEN RAW BREADED SHRIMP¹

PRODUCT DESCRIPTION, STYLES, TYPES, AND GRADES

| Sec. | |
|-------|--------------------------------------|
| 262.1 | Product description. |
| 262.2 | Styles of frozen raw breaded shrimp. |
| 262.3 | Types of frozen raw breaded shrimp. |
| 262.4 | Grades of frozen raw breaded shrimp. |

FACTORS OF QUALITY

| | |
|--------|---|
| 262.11 | Ascertaining the grade. |
| 262.12 | Factors evaluated on product in the frozen state. |
| 262.13 | Factors evaluated on product in the thawed state. |

¹ Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act.

DEFINITIONS AND METHODS OF ANALYSIS

262.21 Definitions and methods of analysis.

LOT CERTIFICATION TOLERANCES

262.25 Tolerances for certification of officially drawn samples.

AUTHORITY: The provisions of this Part 262 issued under section 6, 70 Stat. 1122, 16 U.S.C. section 742e; and sections 203 and 205, 60 Stat. 1087, 1090, as amended, 7 U.S.C. 1622, 1624.

PRODUCT DESCRIPTION, STYLES, TYPES, AND GRADES

§ 262.1 Product description.

Frozen raw breaded shrimp are whole, clean, wholesome, headless, peeled, and deveined shrimp, of the regular commercial species, coated with a wholesome, suitable batter and/or breading. Whole shrimp consist of five or more segments of unutilized shrimp flesh. They are prepared and frozen in accordance with good commercial practice and are maintained at temperatures necessary for the preservation of the product. Frozen raw breaded shrimp contain not less than 50 percent by weight of shrimp material. Individual shrimp and/or pieces consolidated into larger units and covered with breading are not considered for grading under this standard.

§ 262.2 Styles of frozen raw breaded shrimp.

(a) *Style I.* "Regular Breaded Shrimp" are frozen raw breaded shrimp containing a minimum of 50 percent of shrimp material.

(b) *Style II.* "Lightly Breaded Shrimp" are frozen raw breaded shrimp containing a minimum of 65 percent of shrimp material.

§ 262.3 Types of frozen raw breaded shrimp.

(a) *Type I—Breaded fantail shrimp—*
(1) *Subtype A.* Split (butterfly) shrimp with the tail fin and the shell segment immediately adjacent to the tail fin.

(2) *Subtype B.* Split (butterfly) shrimp with the tail fin but free of all shell segments.

(3) *Subtype C.* Split (butterfly) shrimp without attached tail fin or shell segments.

(b) *Type II—Breaded round shrimp—*
(1) *Subtype A.* Round shrimp with the tail fin and the shell segment immediately adjacent to the tail fin.

(2) *Subtype B.* Round shrimp with the tail fin but free of all shell segments.

(3) *Subtype C.* Round shrimp without attached tail fin or shell segments.

§ 262.4 Grades of frozen raw breaded shrimp.

(a) "U.S. Grade A" is the quality of frozen raw breaded shrimp that when cooked possesses a good flavor and odor, and that for those factors which are rated in accordance with the scoring system outlined in the following sections the total score is not less than 85 points.

(b) "U.S. Grade B" is the quality of frozen raw breaded shrimp that when cooked possesses a reasonably good flavor and odor, and that for those factors which are rated in accordance with the scoring system outlined in the following sections the total score is not less than 70 points.

(c) "Substandard" is the quality of frozen raw breaded shrimp that fail to meet the requirements of "U.S. Grade B."

FACTORS OF QUALITY

§ 262.11 Ascertaining the grade.

General. In addition to considering other requirements outlined in the standard, the following quality factors are evaluated in ascertaining the grade of the product.

(a) Factors not rated by score points: Flavor and odor. Flavor and odor are determined by organoleptic means after the product has been cooked in a suitable manner (§ 262.21(w)).

(b) Factors rated by score points: The quality of the product with respect to factors scored is expressed numerically on the scale of 100. Deductions from the maximum possible score of 100 are assessed for essential variations of quality within each factor. The score of frozen raw breaded shrimp is determined by observing the product in the frozen and thawed states.

§ 262.12 Factors evaluated on the product in the frozen breaded state.

Factors affecting qualities that are measured on the product in the frozen state are: Loose breading and frost, ease of separation, uniformity of size, condition of coating, extraneous material, and damaged breaded shrimp. For the purpose of rating the factors that are scored in the frozen state, the schedule of point deductions in Table 1 applies. This schedule of point deductions is based on the examination of one complete indi-

vidual package (sample unit) regardless of the net weight of the contents of the package.

§ 262.13 Factors evaluated on thawed debreaded product.

Factors affecting qualities that are measured on the product in the thawed debreaded state are: Degree of deterioration, dehydration, sand veins, black spot, extra shell, extraneous material,

and swimmerets. For the purpose of rating the factors that are scored in the thawed debreaded state, the schedule of point deductions in Table 2 applies. This schedule of point deductions is based on the examination of 20 whole shrimp selected at random from one or more packages. Examinations of this sample of 20 whole shrimp is continued under § 262.21 (U).

TABLE 1—SCHEDULE OF POINT DEDUCTIONS FOR RATING IN FROZEN BREADED STATE

| Factor | Quality description | Deductions allowed |
|---------------------------------|--|--|
| | | Points |
| 1. Loose breading or frost..... | 2 percent but less than 3 percent..... 3 percent but less than 5 percent..... 5 percent or more..... | 5 10 21 |
| 2. Ease of separation..... | Separate easily after being removed from carton and exposed to room temperature for not more than 4 minutes..... Separate easily after being removed from carton and exposed to room temperature for not more than 6 minutes..... Does not separate easily after being removed from carton and exposed to room temperature for 6 minutes..... | 3 6 10 |
| 3. Uniformity..... | Ratio of weight of largest to smallest breaded shrimp in sample unit as defined under section 262.21 (U): Up to 1.50..... 1.51-1.60..... 1.61-1.70..... 1.71-1.80..... 1.81-1.90..... 1.91-2.00..... 2.01-2.10..... 2.11-2.20..... 2.21-2.30..... 2.31-2.40..... Over 2.40..... | 0 1 2 3 4 5 6 7 8 9 10 |
| 4. Condition of coating..... | Degree of halo or bailing up or holidays (identify type of defect by circling the proper word): Slight—each 10 percent by count or fraction thereof..... Moderate—each 10 percent by count or fraction thereof..... Marked—each 10 percent by count or fraction thereof..... Excessive—each 10 percent by count or fraction thereof..... | 1 2 4 10 |
| 5. Damaged breaded shrimp..... | For each 5 percent by count or fraction thereof..... Tail fin broken or missing, each 5 percent or fraction thereof (except in Type I, subtype C, and Type II, subtype C)..... | 3 1 |
| 6. Extraneous material..... | If extraneous material, except filthy or deleterious substances, are found in more than one package per lot, the entire lot shall be declared substandard. ¹ | |

¹ Filthy or deleterious substances in food products constitute a violation of the Food, Drug, and Cosmetic Act. Products containing such substances are ineligible for the purposes of applying this document.

TABLE 2—SCHEDULE FOR POINT DEDUCTIONS FOR EXAMINATION IN THAWED, DEBREADED STATE
[Subtotals brought forward]

| Factor | Quality description | Deductions allowed |
|---|--|--------------------|
| | | Points |
| 1. Degree of dehydration..... | Slight—each shrimp..... Moderate—each shrimp..... Marked—each shrimp..... Excessive—each shrimp..... | 1 2 3 16 |
| 2. Deterioration..... | Slight—each shrimp..... Moderate—each shrimp..... Marked—each shrimp..... Excessive—each shrimp (provided that, if excessive deterioration occurs in more than one sample unit per sample, the entire lot shall be declared substandard)..... | 2 5 10 20 |
| 3. Sand veins..... | For each dark vein present deduct according to the following schedule: Equivalent in length to two segments..... Equivalent in length to three segments..... Equivalent in length to four or more segments..... | 1 2 3 |
| 4. Black spot..... | Slight but obvious, on average..... Moderate, on average..... Marked—each shrimp..... | 3 6 3 |
| 5. Extra shell (see subtypes definition)..... | (Beyond first segment adjacent to tail fin only for Type I, subtype A, and Type II, subtype A): Less than one whole extra shell segment..... One extra segment or more..... | 1 3 |
| 6. Swimmerets..... | For last pair only adjacent to tail fin..... For more than last pair..... | 1 3 |
| 7. Damaged shrimp..... | For each shrimp..... Tail fin broken or missing, each 5 percent (except in Type I, subtype C, and Type II, subtype C)..... | 3 1 |
| 8. Extraneous material..... | If extraneous material, except filthy or deleterious substances, are found in more than one package per lot, the entire lot shall be declared substandard. ¹ | |

¹ Filthy or deleterious substances in food products constitute a violation of the Food, Drug, and Cosmetic Act. Products containing such substances are ineligible for the purposes of applying this document.

DEFINITIONS AND METHODS OF ANALYSIS
§ 262.21 Definitions and methods of analysis.

(a) "Pantall shrimp": This type is prepared by splitting and peeling the shrimp except that for subtype A, the tail fin remains attached and the shell segment immediately adjacent to the tail fin remains attached. Subtype B, the tail fin remains, but the shrimp are free of all shell segments. Subtype C, the shrimp are free of tail fins and all shell segments.

(b) "Round shrimp": This type is the round shrimp, not split. The shrimp are peeled except that for subtype A, the tail fin remains attached and the shell segment immediately adjacent to the tail fin remains attached. Subtype B, the tail fin remains, but the shrimp are free of all shell segments. Subtype C, the shrimp are free of all shell segments and tail fins.

(c) Good flavor and odor: "Good flavor and odor", essential requirements for a Grade A product, means that the cooked product has flavor and odor characteristics of freshly caught or well-refrigerated shrimp and the breading is free from staleness and off-flavors and off-odors of any kind. Iodoform is not to be considered in evaluating the product for flavor and odor.

(d) Reasonably good flavor and odor: "Reasonably good flavor and odor" minimum requirement of Grade B products, means that the cooked product may be somewhat lacking in the good flavor and odor characteristics of freshly caught or well-refrigerated shrimp but is free from objectionable off-flavors and objectionable off-odors of any kind.

(e) "Dehydration" refers to the occurrence of whitish areas on the exposed ends of the shrimp (due to the drying of the affected area) and to a generally desiccated appearance of the meat after the breading is removed.

(f) "Deterioration" refers to any detectable change from the normal good quality of freshly caught shrimp. It is evaluated by noting in the thawed product deviations from the normal odor and appearance of freshly caught shrimp.

(g) "Extraneous material" consists of non-edible material such as sticks, seaweed, shrimp thorax, or other objects that may be accidentally present in the package.

(h) Slight: "Slight" refers to a condition that is scarcely noticeable but does affect the appearance, desirability, and/or eating quality of breaded shrimp.

(i) Moderate: "Moderate" refers to a condition that is conspicuously noticeable but that does not seriously affect the appearance, desirability, and/or eating quality of the breaded shrimp.

(j) Marked: "Marked" refers to a condition that is conspicuously noticeable and that does seriously affect the appearance, desirability, and/or eating quality of the breaded shrimp.

(k) Excessive: "Excessive" refers to a condition that is very noticeable and is seriously objectionable and the product cannot be graded above Grade B; this is a limiting rule.

(l) Halo: "Halo" means an easily recognized fringe of excess batter and breading extending beyond the shrimp flesh and adhering around the perimeter or flat edges of a split (butterfly) breaded shrimp.

(m) **Balling up:** "Balling up" means the adherence of lumps of the breading material to the surface of the breaded coating, causing the coating to appear rough, uneven, and lumpy.

(n) **Holidays:** "Holidays" means voids in the breaded coating as evidenced by bare or naked spots.

(o) **Damaged frozen raw breaded shrimp:** "Damaged frozen raw breaded shrimp" means frozen raw breaded shrimp that have been separated into two or more parts or that have been crushed or otherwise mutilated to the extent that their appearance is materially affected.

(p) **Damaged shrimp (thawed state):** "Damaged shrimp" are those that have been mashed, physically or mechanically injured, or mutilated to the extent that their appearance is materially affected. Deductions should not be made on same shrimp receiving deductions for damage in the frozen state.

(q) **Black spot:** "Black spot" means any blackened area that is markedly apparent on the flesh of the shrimp.

(r) **Sand vein:** "Sand vein" means any black or dark sand vein that has not been removed, except for that portion under the shell segment adjacent to the tail fin when present.

(s) **Extra shell:** "Extra shell" means any shell segment(s) or portion thereof, contained in the breaded shrimp except the first segment adjacent to the tail fin for Type I, subtype A, and Type II, subtype A.

(t) **Loose breading and frost:** "Loose breading and frost" is considered to be part of the net weight and is determined by use of a balance and by following the steps given below:

1. Remove the overwrap.
2. Weigh carton and all contents.
3. Transfer breaded shrimp to balance and weigh.
4. Weigh carton less shrimp but including waxed separators and inserts (if used), crumbs, and frost.
5. Remove crumbs and frost from carton and separators.
6. Weigh cleaned carton and separators.
7. Calculate loose breading and frost:

Percent loose breading and frost

$$= \frac{(4)-(6)}{(2)-(6)} \times 100.$$

A proportionate amount of the loose breading and frost must be added to the weight of the sample in paragraph (v) (2) (ii) of this section.

(u) **Uniformity:** "Uniformity" is determined for packs of various sizes by the ratio of the weights of the largest to the smallest breaded shrimp as outlined by the following schedule:

| | |
|---------------------|------------------------|
| Up to 10 oz. | 3 largest/3 smallest |
| 10.1 oz. to 1.5 lb. | 6 largest/6 smallest |
| 1.51 lb. to 2.5 lb. | 8 largest/8 smallest |
| Over 2½ lb. | 10 largest/10 smallest |

(v) **Percent shrimp material:** "Percent shrimp material" means the percent by weight of shrimp material in a sample

preferably with spray attached, and rinse the shrimp without rubbing the flesh, being careful to keep all rinsings over the sieves and not having the stream of water hit the shrimp on the sieve directly. Use a rubber policeman to remove adhering breading. Lay the shrimp out singly on the sieve as rinsed, split side down and tails up. Remove top sieve and drain on a 45-degree angle for 2 minutes, then transfer shrimp to balance. Rinse contents of the No. 20 sieve onto a shallow baking pan and collect any particles of shrimp material (flesh, tailfin), and add to shrimp on balance and weigh.

(ii) Calculate percent shrimp material:

$$\text{Percent shrimp material} = \frac{\text{Weight of debreaded sample}}{(\text{Weight of sample}) + (\text{weight of sample} \times \text{percentage loose breading and frost})} \times 100$$

as determined by the method described below or other methods giving equivalent results. This calculation is based on 20 whole shrimp as stipulated in § 262.13.

(i) Equipment needed:

(i) Two-gallon container approximately 9 inches in diameter.

(ii) Two-vaned wooden paddle, each vane measuring approximately 1¼ inches by 3¼ inches.

(iii) Stirring device capable of rotating the wooden paddle at 120 rpm.

(iv) Balance accurate to 0.01 ounce (0.1 gram).

(v) U.S. standard sieve—½-inch sieve opening; 12-inch diameter.

(vi) U.S. standard sieve—ASTM—No. 20, 12-inch diameter.

(vii) Forceps, with blunt points.

(viii) Shallow baking pan.

(ix) Rubber policeman to remove bits of breading from shrimp.

(2) Procedure:

(i) Weigh sample (20 shrimp) to be debreaded. Fill container three-fourths full of water at 70°–80° F. Suspend the paddle in the container leaving a clearance of at least 5 inches below the paddle vanes, and adjust speed to 120 rpm. Add shrimp and stir for 10 minutes. Stack the sieves, the ½-inch mesh over the No. 20 and pour contents of container onto them. Set the sieves under a faucet,

(w) Cooked in a suitable manner: "Cooked in a suitable manner" means cooked in accordance with the instructions accompanying the product. If, however, specific instructions are lacking, the product for inspection is cooked as follows:

(1) Transfer the breaded shrimp, while still frozen, in a wire mesh deep fry basket sufficiently large to hold the shrimp in a single layer without touching one another.

(2) Lower the basket into a suitable liquid oil or hydrogenated vegetable oil at 350°–375° F. Cook for 3 minutes, or until the shrimp attain a pleasing golden brown color.

(3) Remove basket from the oil and allow the shrimp to drain for 15 seconds. Place the cooked shrimp on a paper towel or napkin to absorb the excess oil.

LOT CERTIFICATION TOLERANCES

§ 262.25 Tolerances for certification of officially drawn samples.

The sample rate and grades of specific lots shall be certified in accordance with Part 260 of this chapter (Regulations Governing Processed Fishery Products, 25 F.R. 8427, Sept. 1, 1960).

HEARING ON APPLICATION FOR FISHING VESSEL CONSTRUCTION DIFFERENTIAL SUBSIDY:

Waasy T. Franks and Carmel F. Franks, Fort Myers, Fla., have applied for a fishing vessel construction differential subsidy to aid in the construction of an 85-foot overall steel vessel to engage in the fishery for shrimp (including royal-red shrimp), snapper, grouper, and Atlantic tuna.

A hearing on the economic aspects of this application was scheduled to be held on April 6, 1965, in Washington, D. C.

Notice of the application and hearing was published in the Federal Register, March 5, 1965.



Department of Labor

WAGE AND HOUR AND PUBLIC CONTRACTS DIVISIONS

WAGE ORDER FOR FOOD AND RELATED PRODUCTS INDUSTRY IN PUERTO RICO:

A wage order setting new minimum wage rates under the Fair Labor Standards Act in the food and related products industry in Puerto Rico was published by the U. S. Labor Department in the Federal Register, March 17, 1965, to become effective April 3, 1965, as a revision of Title 29, Code of Federal Regulations, Part 673.2.

The revised regulations did not change the minimum wage rate for tuna canneries which

was already at the \$1.25 hourly minimum effective on the mainland.

Note: See Commercial Fisheries Review, March 1965 p. 100.



Small Business Administration

LOAN APPROVED FOR CRAB PROCESSING FIRM IN ALASKA:

The Small Business Administration has approved a \$218,000 loan to the Greater Anchorage Development Corp., Congressman Ralph J. Rivers reported February 24, 1965. He said the money will be lent in turn to Theodore Seafoods, Inc., of Cordova, Alaska, to purchase a vessel and convert it for crab processing and cold-storage and to construct a dock. (The Seattle Times, February 25, 1965.)



Eighty-Ninth Congress (First Session)



Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.

ANADROMOUS FISH CONSERVATION: The Vice President, Mar. 22, 1965, presented to the Senate a joint resolution of the State of California, for the Congress of the United States to enact legislation on the protection, enhancement and improvement of salmon and anadromous fish, so that the Federal Government can participate in efforts to preserve and enhance this vital resource; to Committee on Commerce.

COMMERCIAL FISHERIES RESEARCH AND DEVELOPMENT ACT: House Speaker, Mar. 25, 1965, presented memorial of the Legislature of the State of Alaska, memorializing the President and the Congress of the United States for full appropriation support for the com-

mercial Fisheries Research and Development Act of 1964; to Committee on Appropriations.

Senate received Apr. 1, 1965, a resolution (S. J. Res. 48) of the Legislature of the State of Alaska similar to that received by the House; to Committee on Appropriations.

COMMODITY PACKAGING AND LABELING: H. R. 6070 (Corman) introduced in House, Mar. 10, 1965, to amend the Clayton Act to prohibit restraints of trade carried into effect through the use of unfair and deceptive methods of packaging or labeling certain consumer commodities distributed in commerce, and for other purposes; to Committee on the Judiciary.

EXPORT EXPANSION ACT OF 1965: Senate Committee on Commerce held hearings Mar. 17-18, 22, 1965, on S. 558, proposed Export Expansion Act of 1965; hearings recessed subject to call.

Rep. Adams of Washington in extension of remarks in Congressional Record, Mar. 29, 1965 (p. A1475), inserted a statement he made before the Senate Commerce Committee on Mar. 17, 1965, re the Export Expansion Act of 1965.

FISHERIES LOAN FUND EXTENSION: Introduced in House, H. R. 8090 (O'Neill of Mass.) and H. R. 6101 (Tupper) Mar. 10, 1965, H. R. 6362 (Keith) Mar. 16, and H. R. 6921 (Bates) Mar. 30, to extend the term during which the Secretary of the Interior is authorized to make fisheries loans under the Fish and Wildlife Act of 1956, and for other purposes; to Committee on Merchant Marine and Fisheries.

Representative Keith remarked (Congressional Record, Mar. 16, 1965; p. 4971) that: "... The effectiveness of this program and its contribution to the economic welfare of our fishing fleet is indicated by statistics from the Bureau of Commercial Fisheries, which administers the act: As of July 31, 1964, the Bureau reports that a total of 142 fishing vessels had been replaced and 588 others had been converted, rebuilt, repaired, or reequipped with new gear or new engines under the act. In addition, 280 vessel mortgages and lienable debts of another 255 vessels were refinanced. Many of these were multipurpose loans. In other words, more than 1,000 vessels have been aided in their continued operation by this program--vessels that conceivably might have otherwise been lost to our beleaguered fishing industry. . . ."

House Speaker, Mar. 22, 1965, presented a memorial of the Legislature of the State of Alaska, memorializing the President and the Congress of the United States to approve pending legislation to extend the term during which the Secretary of the Interior is authorized to make fisheries loans under the Fish and Wildlife Act of 1956; to Committee on Merchant Marine and Fisheries.

The Vice President, Mar. 25, 1965, presented to the Senate a resolution (S. J. Res. 40) of the Legislature of Alaska urging that Congress pass, and the President of the United States approve S. 998 (would amend the Fish and Wildlife Act of 1956 so as to extend until 1975 the authority of the Secretary of the Interior to make loans for financing and refinancing the operations of commercial fishing vessels and their maintenance and repair); to the Committee on Commerce.

FISH HATCHERIES: Sen. Bennett remarked (Congressional Record, Mar. 8, 1965, pp. 4210-4212) in the Senate on funds for the proposed Jones Hole National

Fish Hatchery in Utah. He inserted a letter he received from the Director of the Bureau of Sport Fisheries and Wildlife and his exchange of correspondence with the Director of the Bureau of the Budget on the subject.

FISH FARMING: Senator Carlson in Congressional Record, Mar. 22, 1965 (p. 5319) remarked that an interesting proposal for supplying farmers of Kansas with a new source of farm income is rapidly reaching a stage of practical operation. Proposal provides for a landowner to construct water impoundments, generally known as farm ponds, for the purpose of fish farming. In the near future information on production and marketing will be available to those farmers interested.

FOOD FOR PEACE: Sen. Bartlett pointed out in Congressional Record, Apr. 1, 1965 (pp. 6396-6397) that President Johnson has sent to Congress the annual report on the food-for-peace program, outlining the importance of the program to our agricultural interests and developing foreign trade; also that an effort was being made to improve the nutritional balance in the commodities sold under the program. The Senator said, "In my opinion, this essential balance cannot be obtained unless the administration implements the law, recently enacted, which permits high protein fishery products to be added to the food-for-peace program . . ."

FOOD MARKETING NATIONAL COMMISSION: S. 1555 (Magnuson and 4 others) introduced in House, Mar. 17, 1965, to extend for 1 year the date on which the National Commission on Food Marketing shall make a final report to the President and to the Congress and to provide necessary authorization of appropriations for such Commission; to Committee on Commerce.

House Committee on Agriculture, Mar. 26, 1965, filed report (H. Rept. 207) without amendment on H. R. 5702, similar to S. 1555; to the Committee of the Whole House on the State of the Union.

H. Rept. 207, Extension of National Commission on Food Marketing (Mar. 26, 1965, report from the Committee of the Whole House on the State of the Union, U. S. House of Representatives, 89th Congress, 1st session, to accompany H. R. 5702), 4 pp., printed. Committee reported bill favorably without amendment and recommended passage. Contains purpose, cost, executive communication, and changes in existing law.

GREAT LAKES COMMERCIAL FISHERMEN'S PROBLEMS: Sen. Proxmire in Congressional Record, Mar. 29, 1965 (pp. 5984-5986) spoke in the Senate and gave these reasons for the serious decline in the fisheries of the Great Lakes: (1) the serious loss through sea lamprey depredation, (2) pollution of the lakes and their tributary streams, (3) adverse effects on fish consumption, and (4) inefficient industry practices. He also inserted a statement, "What is Wrong in Great Lakes Fisheries and What Can Be Done About It?" submitted by Gerald Bolda, president of the Midwest Federated Fisheries Council.

INTERIOR DEPARTMENT: Sen. Committee on Commerce held hearings on the nomination of Stanley A. Cain, of Michigan, Mar. 16, 1965, to be Assistant Secretary of the Interior for Fish and Wildlife.

INTERIOR DEPARTMENT APPROPRIATIONS REQUEST, FY 1966: Department of the Interior and Related Agencies Appropriations for 1966: Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives, Eighty-Ninth Congress,

1st session; Part 1, Department of the Interior (except Bonneville Power Administration, Bureau of Reclamation, Southeastern Power Administration and Southwestern Power Administration), 1,592 pp., printed; Part 2, Related Agencies, Testimony of Members of Congress, Interested Individuals, and Organizations, 975 pp., printed. Included are testimony, statements and exhibits relating to funds for the Fish and Wildlife Service; the Office of the Commissioner, and its two bureaus, Commercial Fisheries and Sport Fisheries and Wildlife.

H. R. 6767 (Denton) introduced in House, Mar. 25, 1965, bill making appropriations for the Department of the Interior and related agencies (includes the United States Fish and Wildlife Service and its two Bureaus: Commercial Fisheries, and Sport Fisheries and Wildlife) for the fiscal year ending June 30, 1966, and for other purposes. Same day House Committee on Appropriations reported favorably to the House H. R. 6767.

House Committee on Appropriations filed a report, (H. Rept. 205) Mar. 25, without amendment on H. R. 6767; to Committee of the Whole House on the State of the Union.

H. Rept. 205, Department of the Interior and Related Agencies Appropriation Bill 1966 (Mar. 25, 1966, report from the Committee on Appropriations, U. S. House of Representatives, 89th Congress, 1st session, to accompany H. R. 6767), 55 pp., printed. Committee submitted report in explanation of the bill making appropriations for the Department of the Interior and related agencies (includes the U. S. Fish and Wildlife Service and its two Bureaus: Commercial Fisheries and Sport Fisheries and Wildlife) for fiscal year 1966. Contains summary of bill, revenues, summary of increases and decreases, extent of activities funded in bill, and agency by agency discussion of funds requested.

By a voice vote the House, Mar. 30, 1965, passed H. R. 6767. As approved by the House, the bill would provide \$35,551,000 for the Bureau of Commercial Fisheries. Included in the House-passed bill is \$4 million (\$2 million more than requested) to implement the Commercial Fisheries Research and Development Act of 1964 (P. L. 88-309) so that \$3,750,000 would be for aid to states under section 4 (a) of the Act, \$100,000 under section 4 (b) of the Act to continue the special cooperative study to develop a virus-resistant oyster in the four Middle Atlantic States, and \$150,000 for program administration; and \$5 million to carry out the Fishing Fleet Improvement Act of 1964 (P. L. 88-498), since the new Act extends the date for the acceptance of applications to June 30, 1969, extends coverage to the entire commercial fishing industry, authorizes appropriation of \$10,000,000 annually for the program, and increases the subsidy from 33-1/3 percent to 50 percent. Under Management and Investigations of Resources, the net increase over 1965 is primarily to provide a direct appropriation to finance activities funded during the current year by transfer of \$2,125,000 from the Pribilof Islands Fund. Under Construction, the net increase in the budget estimate is in the Columbia River fishery facilities program and consists of: a decrease of \$60,000 for management techniques, a reduction of \$40,000 in program supervision and engineering, and an increase of \$600,000 for replacement of the fishway at Willamette Falls, Oreg.

For Bureau of Sport Fisheries and Wildlife, the House would provide \$49,397,800 instead of the budget estimate of \$46,885,000. For the Office of the Commissioner of Fish and Wildlife, the House would provide \$444,000, the same as the budget estimate.

House, Apr. 1, 1965, asked for concurrence of the Senate on H. R. 5767.

Subcommittee of Senate Committee on Appropriations, Mar. 10, 1965, concluded its hearings on 1966 budget estimates for the Department of the Interior.

Sen. Neuberger in Congressional Record, of Mar. 10, 1965 (p. 4501), inserted House Joint Memorial 10 of the Oregon Legislature, calling on Congress to appropriate Federal funds for the installation of the Willamette Falls Fishway, on the Willamette River at Oregon City, under the Federally financed Columbia River fishery development program.

LAKE ERIE WATER POLLUTION: H. R. 6185 (Vigorito) introduced in House Mar. 11, 1965, to provide grants for assistance in the research of the waters of Lake Erie; to Committee on Interstate and Foreign Commerce.

MARINE BIOLOGICAL LABORATORY: House, Mar. 29, 1965, received a letter from the Under Secretary of the Interior, transmitting a draft of proposed legislation entitled "A bill relating to the use by the Secretary of the Interior of land at La Jolla, California, donated by the University of California for a marine biological research laboratory, and for other purposes"; to Committee on Merchant Marine and Fisheries.

Senate, Apr. 1, 1965, received a letter from the Under Secretary of the Interior similar to that received by the House; to Committee on Commerce.

MARINE EXPLORATION AND DEVELOPMENT ACT: H. R. 6009 (Keith) introduced in House, Mar. 9, 1965, to provide a program of marine exploration and development of resources of the Continental Shelf; to Committee on Interior and Insular Affairs. Representative Keith in the House remarked (Congressional Record, Mar. 10, 1965, pp. 4612-4613) that H. R. 6009 would create a Marine Exploration and Development Commission and charge that high-level Commission with the responsibility of formulating and executing a program of exploration and development of the vast resources of the Continental Shelf and the waters above the shelf. Similar to S. 1091.

House Committee on Interior and Insular Affairs was discharged from further consideration of H. R. 6009 on Mar. 15, and of H. R. 5884 on Mar. 17.

Senator Bartlett inserted in the Congressional Record, Mar. 18, 1965 (pp. 5269-5272), a statement ("Engineering for Marine Exploration and Development") of the need for marine exploration and development by Dr. Edward Wenk, Jr., Chief of the Science Policy Research Division in the Library of Congress, before the American Society of Civil Engineers, in New York City.

MINIMUM WAGE: Senate received Apr. 1, 1965, concurrent resolution (Con. Res. 95) from the Legislature and the Senate of the State of New York memorializing the Congress to amend the Federal Fair Labor Standards Act of 1938, increasing the minimum wage thereunder to \$1.50 per hour; to Committee on Labor and Public Welfare in Senate, and to Committee on Education and Labor in House.

OCEANOGRAPHY: Oceanography--Ships of Opportunity: Hearings before the Subcommittee on Oceanography of the Committee on Merchant Marine and Fisheries, U. S. House of Representatives, 89th Congress,

1st session, Jan. 22, 1965, Serial No. 89-1, 53 pp., illus., printed. Purpose was to see whether or not a valuable contribution could be made to oceanography by taking advantage of presently existing seagoing platforms engaged in commercial pursuits. Also, the possibility of the greater use of the merchant fleet for the collection of oceanographic survey data and to determine whether or not oceanographic data could be collected by merchant ships on a truly not-to-interfere basis.

OCEANOGRAPHIC AGENCY OR COUNCIL: Senate Committee on Commerce resumed hearings, Mar. 16, 1965, to receive testimony on the coordination of the oceanographic program, and on S. 944, proposed National Oceanographic Act of 1965, providing for expanded research in the oceans and in the Great Lakes. Hearings recessed subject to call.

H. R. 6457 (Ashley) and H. R. 6512 (Fulton of Pa.) introduced in House Mar. 18, 1965, to provide for a comprehensive, long-range, and coordinated national program in oceanography, and for other purposes; to Committee on Merchant Marine and Fisheries. Rep. Ashley remarked in the House (Congressional Record, Mar. 18, pp. 5217-5218) that the objective is to establish a program that will enable the United States to attain mastery of the seas without imposing upon the rights and prerogatives of the executive and legislative branches of Government. Would establish a comprehensive, coordinated national program of oceanographic research, exploration and engineering, guided and reviewed by the Congress, prosecuted by the executive, and joined in by all the people. Direction of the program is appropriately assigned to the President, who would be aided by a National Oceanographic Council within his Federal Council for Science and Technology. Also would bring the Great Lakes under the umbrella of the national oceanographic program.

House Speaker, Mar. 23, 1965, presented a memorial of the Legislature of the State of Alaska, memorializing the President and the Congress of the United States relative to the creation of a National Oceanographic Council; to Committee on Merchant Marine and Fisheries.

The Vice President, Mar. 25, 1965, presented to the Senate a resolution (Alaska H. J. Res. 23) of the Legislature of the State of Alaska, urging the enactment of S. 944 (provides for coordination of all Federal oceanographic activities by a proposed National Oceanographic Council) by the Congress; to Committee on Commerce.

Representative Hanna in the House remarked (Congressional Record, Mar. 10, 1965, pp. 4617-4619) that what was needed for the Nation's oceanography program was: An information collection center which provides both a storage facility and a retrieval service. Also that our approach to finding a new and more vital thrust into the understanding and uses of the sea should rest on an announced national policy. He suggests that such a policy, after being broadly stated, be further specifically addressed to at least the following 10 separate divisions in oceanography: climate, energy, food, medicine, minerals and petroleum, recreation, security, transportation and communication, waste and water.

OCEANOGRAPHIC RESEARCH AND SURVEY OF COMMERCIAL FISHERY RESOURCES OF THE UNITED STATES: Senator Kennedy of Mass. inserted in Congressional Record, Mar. 22, 1965 (p. 5349) an editorial ("Two Sound Bills") from the Feb. 10, 1965, issue of the Standard-Times of New Bedford, Mass. Of the measures referred to, one would remove certain restrictions

that handicap the operation of oceanographic research ships such as those of the Woods Hole Oceanographic Institution, at Woods Hole, Mass., and the other would authorize an overall survey of the commercial fishery resources of the United States.

PASSAMAQUODDY TIDAL POWER PROJECT: Sen. Smith and I other presented a joint resolution of the Legislature of the State of Maine memorializing Congress and recommending full development of electric power potential of Passamaquoddy Bay and Upper St. John River.

PESTICIDES AND FISH AND WILDLIFE: S. 1623 (Magnuson and Neuberger) introduced in Senate, Mar. 25, 1965, to amend the Act of August 1, 1958, relating to a continuing study by the Secretary of the Interior of the effects of insecticides, herbicides, fungicides, and other pesticides upon fish and wildlife for the purpose of preventing losses to this resource; to Committee on Commerce. Sen. Magnuson in Congressional Record, Mar. 25, 1965 (pp. 5658-5659) pointed out that the authorization for pesticide research by the Department of the Interior is now limited to an annual appropriation of \$2,565,000 and that the bill would eliminate that ceiling.

PRICE DISCRIMINATION PRACTICES: S. 1484 (McCarthy and 7 others) introduced in Senate Mar. 19, 1965, to amend the Federal Trade Commission Act, to promote quality and price stabilization, to define and restrain certain unfair methods of distribution and to confirm, define, and equalize the right of producers and resellers in the distribution of goods identified by distinguishing brands, names, or trademarks, and for other purposes; to Committee on Commerce.

RESOURCES AND CONSERVATION ACT: Representative Ullman in extension of remarks (Congressional Record, Mar. 11, 1965, pp. A1135-A1136) referred to an article in the Washington Post for Mar. 5, in which President Johnson was quoted as telling the Cabinet that there are entirely too many interagency committees. Rep. Ullman stated that he is particularly concerned with the proliferation of interagency activity in the field of natural resource administration. He suggested to the President and the Members of the Congress that the solution would be a Resources and Conservation Council within the executive office of the President focusing its attention upon the integration, development, promotion, and utilization of our natural resources in the national interest. Inserted was the text of the "Statement of Al Ullman, U. S. Representative from the Second District of Oregon, with reference to H. R. 4430, Feb. 24, 1965," which discusses such a Council.

SALMON: Congressman Thomas M. Pelly inserted in Congressional Record, Mar. 24, 1965 (pp. A1382-A1383) excerpt from the Fishermen's News, on North Pacific high-seas fishing for red salmon by the Japanese.

PESTICIDES STANDARDS OF NONPERSISTENCE: H. R. 6186 (Yates) introduced in House Mar. 11, 1965, to require certain standards of nonpersistence of synthetic pesticides chemicals (economic poisons) manufactured in the United States or imported into the United States; to Committee on Interstate and Foreign Commerce.

SUPPLEMENTAL APPROPRIATIONS, FY 1965 (2nd): A communication (H. Doc. No. 111) from the President of

the United States, Mar. 15, 1965, transmitting a report indicating the necessity for supplemental estimates of appropriations for various departments for fiscal year 1965 and amendments to the request for appropriations transmitted in the budget for the fiscal year 1966; to Committee on Appropriations.

House Subcommittee on Appropriations for the Department of the Interior and Related Agencies held hearings Mar. 23, 1965, on supplemental estimates for the Fiscal Year 1965. Testimony was heard in support of the Bureau of Commercial Fisheries supplemental budget request for \$1,125,000 for "Construction," to repair flood damages to Bureau facilities and equipment in the Pacific Northwest. The Bureau of Sport Fisheries and Wildlife also requested an additional \$1,200,000 for "Construction."

Introduced in House Apr. 2, 1965, H. R. 7091, making supplemental appropriations for fiscal year 1965. House Committee on Appropriations reported (H. Rept. 224) bill on same day to House; to Committee of the Whole House on the State of the Union.

TECHNOLOGICAL LABORATORY LAND IN MARYLAND: Introduced in House, H. R. 5996 (Fallon) and H. R. 6013 (Machen) Mar. 9, and H. R. 6259 (Sickles) Mar. 15, 1965, to provide for the conveyance of certain real property of the United States to the State of Maryland; to Committee on Interior and Insular Affairs. Property affected includes the site of the Bureau of Commercial Fisheries Technological Laboratory, College Park, Md. Contains an authorization of funds to move Department of the Interior facilities as recommended by the Department at hearings held on a similar proposal during the 88th Congress.

WATER POLLUTION CONTROL ACT: Federal Installations, Facilities and Equipment Pollution Control Act: Hearings before a Special Subcommittee on Air and Water Pollution of the Committee on Public Works, United States Senate, 89th Congress, 1st session, on S. 560 (a bill to amend the Federal Water Pollution Control Act, as amended, and the Clean Air Act, as amended, to provide for improved cooperation by Federal Agencies to control water and Air Pollution from Federal Installations and Facilities and to control Automotive Vehicle Air Pollution), Feb. 23, 24, and 26, 1965, 176 pp., printed. Contains departmental reports, statements and communications of Federal, state officials, associations, and other organizations.

Special Subcommittee on Air and Water Pollution of Senate Committee on Public Works met in executive session Mar. 17, on S. 560. Mar. 19, the Subcommittee approved the bill for full Committee consideration. Senate Committee on Public Works same day favorably reported with amendments S. 560. Same Committee Mar. 22, submitted a report (S. Rept. 128) with amendments on S. 560.

S. Rept. 128, Federal Installations, Facilities, and Equipment Control Act (Mar. 22, 1965, report from the Committee on Public Works, U. S. Senate, 89th Congress, 1st session, to accompany S. 560), 15 pp., printed. Committee reported bill favorably with amendments and recommended passage. Contains purpose, need for legislation, major provisions, and changes in existing law.

Senate, Mar. 25, with committee amendments, passed S. 560; motion to reconsider passage was tabled. House Mar. 26, received S. 560 for concurrence; to Committee on Public Works.

WATER POLLUTION CONTROL ADMINISTRATION: H. R. 6077 and H. R. 6078 (both by William D. Ford) introduced in House Mar. 10, 1965, to amend the Federal Water Pollution Control Act, as amended, to establish the Federal Water Pollution Control Administration, to provide grants for research and development, etc.; to Committee on Public Works. Similar to other bills.

House Committee, Mar. 17, in executive session, continued consideration of H. R. 3988; hearings continued Mar. 18. Committee, same date, in executive session ordered reported favorably to the House S. 4 (amended). Committee Mar. 31, 1965, filed report (H. Rept. 215) with amendment on S. 4; to Committee of the Whole House on the State of the Union. (S. 4 had passed Senate Jan. 28, 1965.)

Sen. Muskie regarding the passage by the Senate of S. 4, inserted in Congressional Record, Apr. 1, 1965 (pp. 6312-6314) a paper ("What is Pollution--to A Conservationist?") by Richard H. Stroud, executive vice president of the Sports Fishing Institute, delivered Mar. 8, 1965, to the American Society of Civil Engineers at Mobile, Ala. Sen. Muskie pointed out that the version of S. 4 reported out by the House Committee does not contain the section pertaining to water quality standards.

WATER POLLUTION OF GREAT LAKES: Sen. Young of Ohio, in Congressional Record, Mar. 29, 1965 (pp. 6002-6003) remarked in the Senate that pollution of the Great Lakes is becoming an increasingly serious problem. He stated that, among other things, the commercial fishing industry on the Great Lakes has already been greatly curtailed by the existing contamination and that there is a need for State-Federal action with provisions for enforcement.

WATER PROJECT RECREATION ACT: Subcommittee on Irrigation and Reclamation of House Committee on Interior and Insular Affairs met in executive session Mar. 10, 1965, on H. R. 5269, to provide uniform policies with respect to recreation, fish, and wildlife benefits and costs of Federal multiple-purpose water resource projects, and to provide the Secretary of the Interior with authority for recreation development of projects under his control; met and marked up bill Mar. 17; Mar. 18 ordered bill reported favorably to the full committee. Full committee met Mar. 23, 24, 31, and Apr. 2, on H. R. 5269. Apr. 1 Committee ordered bill favorably reported to the House.

Senate Committee on Interior and Insular Affairs Mar. 22-23, 1965, held hearings on S. 1229, to enhance recreational facilities at Federal water resource and related projects. Hearings adjourned subject to call. Met Mar. 25, 27, and 30, and Apr. 1 Committee ordered favorably reported with amendments S. 1229.

WATER RESOURCES RESEARCH: Water Resources Research: Hearings before the Subcommittee on Irrigation and Reclamation of the Committee on Interior and Insular Affairs, United States Senate, 89th Congress, 1st session, on S. 22 (a bill to promote a more adequate national program of water research), Mar. 2 and 3, 1965, 81 pp., printed. Includes departmental reports, statements and communications from senators, research centers, universities, and associations.

Introduced in House H. R. 5930 (Hanley) Mar. 8, 1965 and H. R. 6282 (Pickle) Mar. 15, to promote a more adequate national program of water research; to Committee on Interior and Insular Affairs.

Irrigation and Reclamation Subcommittee of Senate Committee on Interior and Insular Affairs Mar. 16, in executive session approved, S. 22. Full committee Mar. 19, favorably reported with amendment S. 22. Same Committee Mar. 22, submitted a report (S. Rept. 127) on S. 22.

S. Rept. 127, Water Resources Research Act (Mar. 22, 1965, report from the Committee on Interior and Insular Affairs, U. S. Senate, 89th Congress, 1st session, to accompany S. 22), 18 pp., printed. Committee after comprehensive hearings reported bill favorably and recommended passage. Discusses purpose, background, research needs, categories of water resources research, broad-scale participation essential, committee recommendation, changes in existing law, Executive Agency reports, and as an appendix the statement by President Johnson upon signing S. 2, 88th Congress, into law (P. L. 88-379), the Water Resources Research Act of 1964.

Senate Mar. 25 passed, with committee amendment, S. 22. Motion to reconsider passage was tabled. House Mar. 26 received S. 22 for concurrence; to Committee on Interior and Insular Affairs.

WATER RESOURCES PLANNING ACT: House Committee on Interior and Insular Affairs, Mar. 15, 1965, reported to House H. R. 1111, to provide for the optimum development of the Nation's natural resources through the coordinated planning of water and related land resources, etc.; with amendments (H. Rept. No. 169); referred to Committee of the Whole House on the State of the Union.

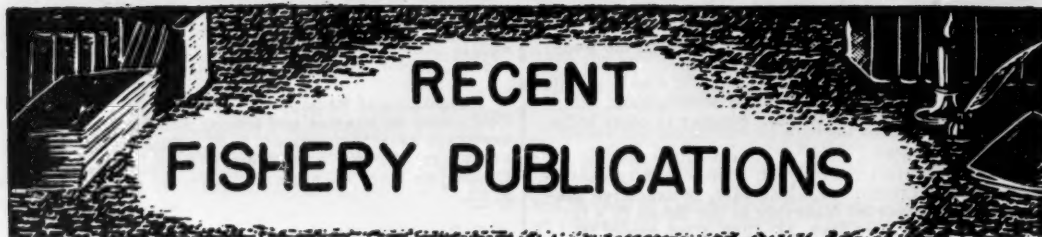
H. Rept. 169, Water Resources Planning Act (Mar. 15, 1965, report from the Committee on Interior and Insular Affairs, U. S. House of Representatives, 89th Congress, 1st session, to accompany H. R. 1111), 22 pp., printed. Committee reported bill favorably with amendments, and recommended passage. Contains purpose, need for legislation, background, cost, committee amendments, section-by-section analysis, and Executive Agency reports.

H. R. 6830 (Helstoski) introduced in House Mar. 26, 1965, to Committee on Interior and Insular Affairs; similar to H. R. 1111.

By a unanimous record vote the House Mar. 31, 1965, passed H. R. 1111. This passage was subsequently vacated and S. 21 (passed Senate Feb. 25, 1965), a similar bill, was passed in lieu after being amended to contain the House-passed language. In addition to several committee amendments, the House adopted two perfecting amendments.

Note: The U. S. Bureau of Commercial Fisheries has issued a leaflet on the status of all legislation of interest to commercial fisheries at the end of the 88th Congress. For copies of MNL-3--"Legislative Actions Affecting Commercial Fisheries, 88th Congress, 1st Session 1963 and 2nd Session 1964," write to the Fishery Market News Service, U. S. Bureau of Commercial Fisheries, 1815 N. Fort Myer Drive, Room 510, Arlington, Va. 22209. Requests for this leaflet will be filled on a first-come first-served basis until the supply is exhausted.





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| Number | Title |
|----------|---|
| CFS-3704 | - Gulf Coast Shrimp Data, October 1964, 20 pp. |
| CFS-3710 | - Frozen Fishery Products, December 1964, 8 pp. |
| CFS-3712 | - Georgia Landings, November 1964, 3 pp. |
| CFS-3714 | - California Landings, September 1964, 4 pp. |
| CFS-3715 | - Michigan, Ohio & Wisconsin Landings, October 1964, 4 pp. |
| CFS-3717 | - South Carolina Landings, November 1964, 3 pp. |
| CFS-3720 | - New Jersey Landings, November 1964, 3 pp. |
| CFS-3721 | - Manufactured Fishery Products, 1963 Annual Summary, 9 pp. |
| CFS-3722 | - New York Landings, November 1964, 5 pp. |
| CFS-3723 | - Mississippi Landings, October 1964, 3 pp. |
| CFS-3724 | - Virginia Landings, November 1964, 4 pp. |
| CFS-3725 | - Fish Meal and Oil, November 1964, 2 pp. |
| CFS-3726 | - Mississippi River Fisheries, 1963 Annual Summary, 9 pp. |
| CFS-3727 | - United States Fisheries, 1963 Annual Summary, 17 pp. |
| CFS-3729 | - Louisiana Landings, November 1964, 3 pp. |
| CFS-3730 | - Alabama Landings, November 1964, 3 pp. |
| CFS-3731 | - Maine Landings, November 1964, 4 pp. |
| CFS-3733 | - South Carolina Landings, December 1964, 3 pp. |
| CFS-3734 | - Georgia Landings, December 1964, 3 pp. |
| CFS-3735 | - California Landings, October 1964, 4 pp. |
| CFS-3736 | - Florida Landings, December 1964, 8 pp. |
| CFS-3737 | - Fish Meal and Oil, December 1964, 2 pp. |
| CFS-3744 | - Gulf Coast Shrimp Data, November 1964, 21 pp. |

Sep. No. 730 - Exploratory Fishing for Spiny Lobsters, Sand Lobsters, and Scallops in Panama.

Sep. No. 731 - On-The-Job Training Program for Trainee Commercial Fishermen.

SSR-Fish. No. 489 - Pelagic Fur Seal Investigations, Alaska, 1963, by Clifford H. Fiscus, Gary A. Baines, and Hiroshi Kajimura, 36 pp., illus., Jan. 1965.

SSR-Fish. No. 496 - History of Oceanography in the Offshore Waters of the Gulf of Maine, by John B. Colton, Jr., 20 pp., illus., Dec. 1964.

SSR-Fish. No. 497 - Fur Seal Investigations, Pribilof Islands, Alaska, 1963, by Alton Y. Roppel, Ancel M. Johnson, and Douglas G. Chapman, 64 pp., illus., Jan. 1965.

SSR-Fish. No. 498 - Observations of Cetaceans off California, Oregon, and Washington, by Clifford H. Fiscus and Karl Niggel, 30 pp., illus., Jan. 1965.

SSR-Fish. No. 502 - Fur Seal Investigations Pribilof Islands, Alaska, 1964, by Alton Y. Roppel and others, 50 pp., illus., Jan. 1965. Discusses population and related studies on fur seals on the Pribilof Islands sealing grounds during 1964. Presents information on male seal age classification and bull counts; female age classification and reproduction; tag recoveries, tagging of pups, and tag survey of yearlings; seal mortality; population estimates of pups from the recovery of tagged males and females, of yearling males of 1961 year-class, from sampling live pups, and from counting pups on four rookeries; and seal-pup weights. Presents statistical data on kill of male seals, by year-class, 1947-62; kill of female seals, by year-class, 1939-63; records of fur seal pups tagged, 1941, 1945, 1947-49, and 1951-64; and related information. A total of 48,980 male and 16,452 female seals were killed on the Pribilof Islands in 1964. In all, 1,077 skins from males and females were collected for experimental use in relating economic value to age and sex. The predicted male kill as of Aug. 5, 1965, will be 4,000 ages 2 and 5, 33,000 age 3, and 16,000 age 4.

SSR-Fish. No. 503 - Automatic Data Processing Program for Marine Synoptic Radio Weather Reports, by James H. Johnson, Glenn A. Flittner, and Marvin W. Cline, 77 pp., illus., Feb. 1965.

Annual Report Exploratory Fishing and Gear Research, Bureau of Commercial Fisheries, Region 2, for Fiscal Year 1963 Ending June 30, 1965, by Harvey R. Bullis, Jr. and J. R. Thompson, Circular 193, 70 pp., illus., Dec. 1964. Part 1 discusses history of exploratory fishing and gear research work at the U.S. Bureau of Commercial Fisheries' stations at Pascagoula, Miss., Brunswick, Ga., and Panama City, Fla.; nature and function of projects in exploratory sampling devices, sampling patterns in fishery exploration, bases for quantitative estimates of animal abundance.

dance and availability, and exploratory follow-through and fishery developments; exploratory collections and cooperative work; and role of exploratory fishing and gear research in education. Part 2 covers accomplishments of the Gulf of Mexico exploratory fishing and gear research program at Pascagoula, Miss.; the Caribbean and Tropical Atlantic exploratory fishing and gear research program; the offshore shrimp gear research photoinstrumentation; South Atlantic exploratory fishing and gear research program; gear research and development program; and the BCF/AID spiny lobster exploratory fishing project, Republic of Panama.

Columbia River Fishery Program, 1963, Circular 192, 23 pp., illus., printed, Nov. 1964. Reviews the Columbia River fishery and work of the Columbia River Fishery Development Program through 1963. Discusses the history of the region's fishery resource; resource trends in chinook, sockeye, coho, and chum salmon, and summer and winter steelhead trout; and the habitat. Also covers the development program for hatcheries, stream improvement, screening of diversions, appraisal of project results, and operational studies; water resource investigations; fish facilities; and future of the Columbia River fishery.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE FISHERY MARKET NEWS SERVICE, U. S. BUREAU OF COMMERCIAL FISHERIES, RM. 510, 1815 N. FORT MYER DR., ARLINGTON, VA. 22209.

| Number | Title |
|--------|--|
| MNL-52 | Menhaden Fish Oil Prices--New York City, New York, 1953-1964 and January 1965, 6 pp. |
| MNL-95 | International Fishing Activities in Western and Southern Africa, 1964, 8 pp. |
| MNL-96 | Frozen Fish Importers in France, 2 pp. |
| MNL-97 | Thailand's Fisheries, 3 pp. |

THE FOLLOWING ENGLISH TRANSLATION OF A FOREIGN LANGUAGE REPORT IS AVAILABLE FROM THE U. S. BUREAU OF COMMERCIAL FISHERIES, 101 SEASIDE AVE., TERMINAL ISLAND, CALIF. 90731.

Statistical Report on the Tuna Longline Fisheries by Fishing Grounds for 1963, Translation Series No. 13, 27 pp., processed, Sept. 1964. (Translated from the Japanese, Statistics and Survey Division, Economic Bureau, Ministry of Agriculture and Forestry, Tokyo, Japan, Sept. 1963.)

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

California Fisheries, 1964, by V. J. Samson, 48 pp., illus., Feb. 1965. (Market News Service, U. S. Fish and Wildlife Service, Rm. 205, Post Office Bldg., San Pedro, Calif. 90731.) A review of 1964 trends and conditions in the California fisheries, including a summary of fishing seasons in major commercial fisheries during 1964 covering dates and catch quotas. Among the subjects covered are the tuna industry and cannery receipts; the domestic tuna fishery; American Tunaboat Association tuna auctions and ex-vessel prices; tuna prices and changes; the albacore fishery and ex-vessel price stability; reduction in number of tuna canneries by mergers; slight increase in canned tuna pack; imports of frozen tuna and canned tuna in brine; canned tuna prices held steady after early advance; construction of largest U. S. fishing vessel for tuna purse-seining and loss of 7 other vessels. Also covered are the sardine industry and its continued failure, canned sardine pack and prices; the mackerel fishery; anchovy fishery; canned pet

food pack; whaling industry; and fish meal prices and markets, 1961-64. Included in the statistical tables are data on tuna and tunalike fish--canners' receipts, domestic landings, frozen imported tuna, and canned pack, 1962-64; sardine landings, pack, and meal and oil produced, 1963/64 and 1964/65 seasons; and the cannery receipts and pack of mackerel and jack mackerel, 1962-64. Also contains data on cannery receipts of raw materials and production of anchovies, herring, pet food, and tuna and mackerel meal and oil; landings of fish and shellfish in the Eureka and San Pedro-Santa Monica areas; imports of fishery products into Arizona and California Customs Districts, 1963-64; and whale fishery, 1962-64. An attractive cover showing the new 167-foot steel tuna purse-seiner, *City of Tacoma*, enhances this year's report.

California Fishery Market News Monthly Summary, Part

I - Fishery Products Production and Market Data, Jan. 1965, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif. 90731.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, sardines, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; prices for fish meal, oil, and solubles; for the month indicated.

California Fishery Market News Monthly Summary, Part

II - Fishing Information, Feb. 1965, 9 pp., illus. (U. S. Bureau of Commercial Fisheries, Tuna Resources Laboratory, P. O. Box 271, La Jolla, Calif. 92038.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists; for the month indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Mar-

ket Fresh and Frozen Fishery Products Receipts, Prices, and Trends, Jan. 1965, 14 pp. (Market News Service, U. S. Fish and Wildlife Service, U. S. Customs House, 610 S. Canal St., Rm. 704, Chicago, Ill. 60607.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the month indicated.

Fishery Industrial Research, vol. 2, no. 3, Nov. 1964,

81 pp., illus., printed. (Branch of Reports, U. S. Bureau of Commercial Fisheries, 2725 Montlake Blvd., Seattle, Wash. 98102.) Contains articles on: "Free liquid content of Gulf oysters and suggested change in standards," by Arthur F. Novak, Ernest A. Fieger, and Joseph A. Liuzzo; "Comparison of chemical and sensory tests for assessing storage life of iced calico scallops," by Melvin E. Waters; "Cholesterol content of various species of shellfish. 1--Method of analysis and preliminary survey of variables," by Mary H. Thompson; "Evaluation of the micro-diffusion method for the determination of tertiary volatile base in marine products," by John Spinelli; "Preparation of chilled meat from Atlantic blue crab," by David H. B. Ulmer, Jr.; "Observations of the 'blueing' of king crab, *Paralithodes camtschatica*," by Newman S. Groninger and John A. Dassow; "Comparison of the picric acid turbidity and Nessler tests with subjective evaluations of quality of shrimp," by Mary E. Ambrose, Charles F. Lee, and Frank T. Piskur; and "Economic study of sea scallop production in the United States and Canada," by Richard M. Doherty and others.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, Jan. 1965, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, Rm. 609, 600 South St., New Orleans, La. 70130.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; Gulf menhaden landings and production of meal, solubles, and oil; fishery imports at Port Isabel and Brownsville, Tex., from Mexico; fishery imports at Mobile, Ala., Morgan City and New Orleans, La., Miami, Fla., and Houston, Tex.; and sponge sales; for the month indicated.

Japanese Views on Whaling, by Lorry M. Nakatsu, 3 pp., illus., processed, Feb. 19, 1965 (Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, 101 Seaside Ave., Terminal Island, Calif. 90731.)

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, Jan. 1965, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va. 23369.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary--Nov. 1965, 20 pp. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York, N. Y. 10038.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and fresh-water sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the month indicated.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, Feb. 1965, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle, Wash. 98104.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl vessels reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; shrimp landings; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

Techniques for Infrared Survey of Sea Temperature (Report of a Workshop Held at the U. S. Department of the Interior, Washington, D. C., April 27 and 28, 1964), Circular No. 202, 145 pp., illus., processed, Nov. 1964. (Sandy Hook Marine Laboratory, Bureau of Sport Fisheries and Wildlife, U. S. Fish and Wildlife Service, Highlands, N. J.)

Employment Opportunities in the Bureau of Sport Fisheries & Wildlife, 20 pp., illus., printed, 1964, 30 cents. Discusses briefly the organization of the Bureau of Sport Fisheries and Wildlife and its major programs. A section on careers covers refuge manager, fishery biologist, wildlife biologist, fish hatchery manager, animal control biologist, mammal control agents (hunters), U. S. game management agent, aid-type positions, engineers, appointment, U. S. game management agent (pilot), salaries, qualifications, how to apply, location, transportation, quarters for employees, positions in Alaska, physical ability, opportunities in trades and crafts, and summer employment. A section on fringe benefits includes information on leave, retirement, group health benefits, group life insurance, incentive awards program, development, and uniforms and uniform allowance. Other sections cover opportunities in other agencies, preparing for a career in conservation work, and addresses of Bureau of Sport Fisheries and Wildlife field offices and Civil Service offices. Of interest primarily to young people in high school or college who are considering a career in conservation work.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

AGAR-AGAR:

"Agar--its uses and potential in New Zealand," by L. B. Moore, article, Commercial Fishing, vol. 3, no. 5, Jan. 1965, pp. 23-24, 25, illus., printed, Trade Publications Ltd., 47 Lewis Eady Bldg., Queen St., Auckland, New Zealand. About 100 tons of dry seaweed (for the production of agar-agar) are produced annually in New Zealand. Agar-agar is used for growing laboratory cultures in hospitals and laboratories and as an additive in canned foods. The New Zealand industry developed during World War II when the supply from Japan, formerly the only agar-agar exporter, was cut off.

ANCHOVY:

Behavior and Natural Reactions of the Northern Anchovy, ENGRAULIS MORDAX Girard, under the Influence of Light of Different Wave Lengths and Intensities and Total Darkness, by Anatole S. Loukashkin and Norman Grant, 62 pp., illus., printed. (Reprinted from Proceedings of the California Academy of Sciences, Fourth Series, vol. 31, no. 24, Jan. 15, 1965, pp. 631-692.) Sardine Research Program, California Academy of Sciences, Golden Gate Park, San Francisco 18, Calif.

"Economic efficiency of the exploitation of the Black Sea anchovy for the production of feeding flour (fish flour) and oil," by L. S. Alpatikova, article, Trudy AzCherNIRO, vol. 21, 1961, pp. 63-73, printed in Russian. Azovo-Chernomorskii Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaistva, Moscow, U.S.S.R.

ARTIFICIAL HABITAT:

Housing Scheme for Fishes, by Yasuo Ohshima, No. 8, 56 pp., illus., printed in Japanese. Japan Fisheries

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Resource Conservation Association, Shiba Nishikubo Sakuragawa-cho, 24, Minato-ku, Tokyo, Japan.

ATHEROSCLEROSIS:

"Nutrition and atherosclerosis. Marine algae in atherosclerosis," by Iris Ilona Lieber, article, Chemical Abstracts, vol. 59, Sept. 30, 1963, Abstract No. 7915a, printed, American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

BELGIUM:

Market Factors in Belgium, by Robert H. Walker, OBR 64-142, 14 pp., printed, Dec. 1964, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Opportunities for U. S. exporters to boost sales to Belgium are numerous and should increase over the foreseeable future. In addition to market outlook, the report discusses the scope and nature of the market, commercial competition, market analysis for selected commodities, and a market profile for the country.

BRAZIL:

Sudene, Boletim de Estudos de Pesca, processed in Portuguese, Divisao de Documentacao, Setor de Intercambio e Aquisicao, Superintendencia do Desenvolvimento do Nordeste, Edificio Juscelino Kubitschek, 9^a Andar, Recife, Pernambuco, Brazil: vol. 3, nos. 9/10, Sept./Oct. 1963, 25 pp., illus. Includes, among others, these articles: "Conteudo estomacal e evolucao sexual dos atuns e especies afins" (Stomach contents and sexual development of tunas and related species), by Jose Bonifacio G. Fonseca and Silvio B. Moraes; and "Contribuicao ao estudo as variacoes de produtividade das pescarias de lagosta na costa oriental do nordeste Brasileiro e Flutuações na composicao dos desembarques na praia do Pina (Pe)" (Contribution to the study on the variations in productivity of the spiny lobster fisheries on the west coast of northeast Brazil and fluctuations in the composition of the catches on the Pina coast), by Soloncy J. C. de Moura. vol. 3, nos. 11/12, Nov./Dec. 1963, 35 pp., illus. Contains, among others, these articles: "Observaciones colhidos em nucleos pesqueiros de Alagoas, Sergipe e Bahia" (Collected observations on the fisheries centers of Alagoas, Sergipe, and Bahia), by Bento F. Granjeiro; and "Variacoes sazonais na composicao biologica dos desembarques de lagostas" (Seasonal variations in the biological composition of the spiny lobster landings), by Petronio Alves Coelho. vol. 4, no. 1, Jan./Feb. 1964, 21 pp., illus. Contains, among others, these articles: "Determinacao de parametros biometricos em *Panulirus argus*" (Determination of length-weight relationships in *Panulirus argus*), by Gercilde de Amorim Borges; and "Divulgacoes tecnologicas do pescado" (Fishery technological reports), by Zeneudo Luna Machado.

CALIFORNIA:

California Fish and Game, vol. 51, no. 1, Jan. 1965, 64 pp., illus., printed, single copy 75 cents. Office of Procurement, Documents Section, P. O. Box 1612, Sacramento, Calif. 95807. Includes, among others, articles on: "The animal food fishery in California, 1961-1962," by R. J. Nitsos and Paul H. Reed; and "The southern California mackerel fishery and age

composition of the Pacific mackerel catch for the 1959-60 and 1960-61 seasons," by Harold Hyatt.

CAMBODIA:

Foreign Trade Regulations of Cambodia, by Nandor J. Cheplo, OBR 65-2, 8 pp., printed, Jan. 1965, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) The Cambodian Government maintains strict control over foreign trade as a means of protecting its balance of payments and encouraging local production. In addition to trade policy, the report discusses Cambodia's import tariff system, shipping documents, marking and labeling requirements, and special customs provisions. Also covers nontariff import controls, Cambodia's export controls, sales and other internal taxes, United States foreign trade controls, and Government representation between that country and the United States.

CANADA:

British Columbia Catch Statistics, 1964 (by Area and Type of Gear), 206 pp., illus., processed, Feb. 5, 1965, Economics Branch, Department of Fisheries of Canada, 1155 Robson St., Vancouver 5, B. C., Canada. The fourteenth annual report of catch statistics for British Columbia based on Departmental copies of sales slips that are completed by all commercial fish buyers operating within the Province. The report is divided into three sections: (1) summary of landings by district and total landed value of all fish; (2) highlights of catch statistics--a general review of significant events in the salmon fishery and a review for other species; and (3) detailed district and area monthly statistics by type of gear. For the first time, landings of halibut at U. S. ports by Canadian fishermen are included in the summary and also in the catch from the different areas.

Rapport sur les Pecheries du Quebec pour l'Exercice Financier 1963/1964 (Report on the Fisheries of Quebec for the Financial Year 1963/1964), 97 pp., illus., printed in French. Ministry of Industry and Commerce, Government House, Quebec, Canada.

The following are available from the Queen's Printer and Controller of Stationery, Ottawa, Canada:.

Biological Station, London, Ont., 9 pp., illus., printed. (Reprinted from Fisheries Research Board of Canada Annual Report 1962-63, pp. 65-73.)

Fisheries Statistics, Saskatchewan, 1963, Catalogue No. 24-211, 9 pp., processed in French and English, Jan. 1965, 50 Canadian cents. Contains data on the value of fish landed in Saskatchewan, 1956-63; quantity and value of landings by species, 1962-63; quantity and value of landings by major species and by lakes; capital equipment in primary fisheries operations; and number of persons engaged in the primary fisheries.

Fishes Occurring in the Fresh Waters of Insular Newfoundland, by W. B. Scott and E. J. Crossman, printed, 1964, C\$3.

CARP:

"Food of carp and wild carp during their breeding in the Kuban estuaries," by E. P. Teplova, article,

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Trudy AzNIIRKh, vol. 6, 1963, pp. 163-177, printed in Russian. Azovskii Nauchno-Issledovatel'skii Institut Rybnogo Khozyaistva, Moscow, U.S.S.R.

"Raising 1-year-old carp for sale at Kuban," by S. Strel'nikov, article, Rybovodstvo i Rybolovstvo, no. 1, 1964, pp. 16-18, printed in Russian. Rybovodstvo i Rybolovstvo, Ministerstvo Sel'skogo Khozyaistva SSSR, Moscow, U.S.S.R.

The following articles are from Rybnoe Khozyaistvo Vnutrennykh Vodoemov Latv. SSR, vol. 7, 1963. Trudy Instituta Biologii Akademii Nauk Latv. SSR, Riga, Latvia.:

"Growth of commercial carp fishes in various types of lakes of the Latvian S.S.R.," by M. K. Kundzin'sh, pp. 233-235.

"Importance of natural and artificial food in raising carp yearlings," by V. S. Kirpichnikov, pp. 339-346.

CHILE:

Basic Data on the Economy of Chile, by Richard Kennedy and Mildred P. Burr, OBR 64-138, 24 pp., illus., printed, Dec. 1964, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) While serious economic problems beset the new administration, in late 1964 there were developments that offered prospects for some improvement in the future course of the economy. The report discusses general information on the geography and climate, population, and government; structure of the economy; industrial sectors; and the labor force. Also covers Chile's financial organization, foreign trade, Government role in the economy, and outlook for the economy. According to a section on the fisheries, the dynamic growth of the fish reduction industry of the north has made fisheries an increasingly important factor in Chile's economy. However, the interest of both Government and private capital now seems to be shifting to processing of fish for human consumption--frozen, canned, salted, and smoked.

CLAMS:

"Condition of the Quahog, *Mercenaria mercenaria*, from polluted and unpolluted waters," by R. A. Cooper, S. B. Chenoweth, and N. Marshall, article, Chesapeake Science, vol. 5, no. 5, winter 1964, pp. 155-160, illus., printed, single copy 75 cents. Natural Resources Institute, University of Maryland, Chesapeake Biological Laboratory, Solomons, Md.

"R. I. quahogers make a living despite handraking methods," by Andreas A. Holmsen, article, Maritimes, vol. 9, no. 1, winter 1965, pp. 4-6, illus., printed. Maritimes, Davis Hall, Kingston, R. I. As part of a larger study on the economics of the quahog industry, the Department of Food and Resource Economics at the University of Rhode Island has studied the characteristics of the labor force in handraking. Over 92 percent of the commercial quahog harvest in Rhode Island is taken by handrakers using bullrakes and tongs, since most of the State's waters are closed to dredge boats by legislation. During the license year 1962/63, 872 people took out a commercial handraker's license; yet only

168 persons could be classified as full-time handrakers. An average net return of \$2.84 an hour for full-time handrakers compares favorably with the gross hourly earnings of manufacturing production workers in that State who earned \$2.02.

COD:

Distribution of Cod Catches by Commercial Vessels in the Gulf of St. Lawrence, 1960-1962, by Marcel Moussette, F. D. McCracken, and Alexandre Marcotte, General Series Circular No. 44, 15 pp., illus., processed, Jan. 1965. Biological Station, Fisheries Research Board of Canada, St. Andrews, N. B. Canada.

COMPOSITION:

"Investigations on the technological and nutrient properties of Atlantic fishes," by Z. A. Yakovleva, article, Trudy AzCherNIRO, vol. 21, 1961, pp. 46-50, printed in Russian. Azovo-Chernomorskii Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaistva i Okeanografii, Moscow, U.S.S.R.

CRABS:

"Proximate composition, sodium, and potassium of Dungeness crab," by Richard W. Nelson and Claude E. Thurston, article, Journal of the American Dietetic Association, vol. 45, July 1964, pp. 41-43, printed. American Dietetic Association, 620 N. Michigan Ave., Chicago 11, Ill.

DENMARK:

"Danmarks fiskekonserverindustri 1963-64" (Denmark's fish canning industry 1963-64), article, Konserver & Dybfrost, vol. 22, no. 8, 1964, pp. 99-100, printed in Danish. Teknisk Forlag, Skelbaekgade 4, Copenhagen V, Denmark.

The following are from Dansk Fiskeritidende, vol. 83, 1965. Dansk Fiskeritidende, Studiestraede 3, 2, Copenhagen K, Denmark.:

"Fisk for 8 millioner kr. landet i Stranby i 1964" (Fish worth 8 million kroner landed in Stranby in 1964), no. 5, Jan. 29, p. 57.

"Fisk for 139 mill. kr. landet i Skagen i 1964" (Fish worth 139 million kroner landed in Skagen in 1964), no. 6, Feb. 5, p. 67.

EXPLORATORY FISHING:

"Experimental catch of fish by whaling vessels," by S. S. Vinnov, article, Trudy AzCherNIRO, vol. 21, 1961, pp. 18-29, printed in Russian. Azovo-Chernomorskii Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaistva i Okeanografii, Moscow, U.S.S.R.

FISH COOKERY:

Florida Fish Recipes, 16 pp., illus., printed. Southeastern Fisheries Association, Inc., 330 So. Adams, Tallahassee, Fla. Illustrated with full-color photo prints and pen-and-ink drawings, this most attractive and appetite-appealing booklet presents 22 new recipes developed and tested by U. S. Bureau of Commercial Fisheries Home Economists. All prepared from fish or shellfish landed in Florida, the recipes include sumptuous broiled fillets, shrimp Miami, grilled spiny lobster tails, festive mullet, marinated Spanish mackerel fillets, mullet chowder, deviled crab, oyster club sandwiches, Florida crab boil, southern catfish stew, and shrimp macaroni salad. Also included

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are red snapper Floridian, mullet tomato fan-tans, shrimp paradise salad, shrimp tropicana, party shrimp with avocado dip, oriental king mackerel steaks, spicy red snapper, baked red snapper with sour cream stuffing, tomatoes with crab meat dressing, lobster Cantonese, and grouper Parmesan.

FISH CULTURE:

"Combined rice-fish culture," by F. Sukhoverkhov, article, *Rybovodstvo i Rybolovstvo*, no. 1, 1964, pp. 3-6, printed in Russian, *Rybovodstvo i Rybolovstvo*, Ministerstvo Sel'skogo Khoziaistva SSSR, Moscow, U.S.S.R.

"Japan--yellow tail and prawns," by Ian Richardson, article, *World Fishing*, vol. 13, Sept. 1964, pp. 41, 42, printed, John Trundell & Partners, Ltd., St. Richard's House, Eversholt St., London NW1, England. Japanese fishermen catch the largest quantity of fish in the open sea of any nation in the world, yet the Japanese are making considerable efforts to supplement the natural stocks of fish. In the Inland Sea, the Government has provided artificial shelters in the form of concrete blocks; seaweed has been planted; and artificial reefs have been formed in the belief that these procedures will offer some protection to the fish and that it will result in an increase in the fish stock. In conjunction with private enterprise, the Government has established a sea fish cultivation center in the Inland Sea with the express purpose of hatching fish for liberation into open waters or for further cultivation on marine fish farms. The yellowtail, similar to a horse mackerel, is caught in open water in the spring when it is about 2½ inches long. The small fish are held in net cages until they are large enough to be liberated into larger fish ponds. In less than a year they will have reached market size. The shrimp, *Penaeus japonicus*, are reared commercially to about 25 grams. The problem in regard to shrimp culture is how to keep the adults in captivity in order to provide the required egg stock. Until this is possible, the egg-bearing females will have to be caught in the open sea.

FISH FARMING:

"Fish farming in temperate waters," by C. E. Lucas and B. B. Rae, article, *Scottish Fisheries Bulletin*, no. 22, Dec. 1964, pp. 5-9, printed, Marine Laboratory, Department of Agriculture and Fisheries for Scotland, P. O. Box 101, Victoria Rd., Torry, Aberdeen, Scotland.

FISH MEAL:

"Fishmeal plant development," article, *World Fishing*, vol. 13, Aug. 1964, pp. 51-52, 55, printed, John Trundell & Partners Ltd., St. Richard's House, Eversholt St., London NW1, England.

FISH PORTIONS:

"Design production for flexibility and QC," by John V. Ziemba, article, *Food Engineering*, vol. 36, July 1964, pp. 64-67, illus., printed, Chilton Co., Chestnut and 56th Sts., Philadelphia 39, Pa. Blocks of fish are cut into strips by a high-powered band saw. Strips proceed through multiple rotary cutters, and the sized portions then travel through batter and breading machines. Portions move directly through tunnel freezer or to continuous deep-fat fryer. Fro-

zen portions are finally carton-packed or sent to storage.

FOOD AND AGRICULTURE ORGANIZATION:

Report on the *IPFC Symposium on Increasing Fish Consumption by Improving Handling and Distribution*, 11th Session, Kuala Lumpur, Malaysia, 16th-31st October 1964, IPFC/C64/WP42, 15 pp., processed, Indo-Pacific Fisheries Council, FAO Regional Office for Asia and the Far East, Bangkok, Thailand.

FOREIGN AID:

"In which Cooley loans are discussed--somewhat," by Arthur P. McDermott, article, *International Commerce*, vol. 71, no. 9, March 1, 1965, p. 15, printed, single copy 35 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Describes, in a humorous vein, the operation of the Cooley Loan Program. The Administration for International Development (AID) sets aside a portion of the foreign currencies it receives in payment for our Food for Peace shipments. Any U. S. firm, or its branch, affiliate or subsidiary is eligible for a loan, as long as it is used to promote business or trade in the country where the funds originated. Since most of these are developing countries, manufacturing projects that would contribute to economic growth are preferred, but there are no formal requirements or restrictions. Early in February 1965 AID had the equivalent of \$112 million in the currencies of 23 nations available for loans to businessmen. Since the program began in 1954, 265 loans for the equivalent of \$213 million have been made. Most Cooley loans have been used for working capital, purchase of land, construction costs, and to pay for local goods and services.

FOREIGN TRADE:

Foreign Commerce Handbook: Basic Information and a Guide to Sources, 177 pp., printed (15th Edition), 1964, \$2. Chamber of Commerce of the United States, 1615 H St. NW., Washington, D. C. 20006. Presents references to sources of information and foreign trade services available from U. S. Government, international intergovernmental, international business, and U. S. business organizations. Also provides briefs on major subjects of particular interest to foreign traders such as advertising abroad, banks in foreign trade, U. S. export control, and tariffs of foreign countries. Includes a bibliography of pertinent reference works, books, pamphlets, and periodicals, with listings of selected organizations and their addresses, such as foreign and domestic chambers of Commerce, foreign Embassies and Legations and World Trade Clubs in the U. S., and Department of Commerce Field Offices.

FREEZE-DRYING:

"Storage of food dehydrated by freeze-drying. II--Deterioration of freeze-dried plaice (*Paralichthys olivaceus*) during storage," by Masakichi Kurogi and Susumu Kimura, article, *Chemical Abstracts*, vol. 59, Dec. 23, 1963, Abstract No. 15862d, printed, American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

FREEZING:

"Freezing at sea. I--Some thoughts on technical and economic aspects," by G. C. Eddie, article, *Norwegian Fishing and Maritime News*, vol. 11, no. 4, 1964, pp. 11, 13, 15, 29, 31, printed. Norwegian Fishing and Maritime News, P. O. Box 740, Slottsgt. 3, Bergen, Norway. Paper presented at the OECD Meeting on Fish Technology, 14-17 Sept. 1964, Scheveningen. Purpose of this paper is to introduce the subject of freezing at sea and to prepare the way for a general discussion of the economic and technical aspects. Presents information on organization and policy--form and quality of product, organization of the market, and technical policy and economic consequences; and ship design, costs, and earnings. Some advantages of freezing at sea are low freezing equipment maintenance costs, economies in fuel use effected by slower speeds, and proportionately larger storage space available in larger trawlers.

FROZEN FISH:

"Time-temperature tolerance of frozen seafoods. I--Review of some of the recent literature on the storage life of frozen fishery products," by J. Perry Lane, article, *Food Technology*, vol. 18, July 1964, pp. 156-162, printed. The Garrard Press, 510 N. Hickory, Champaign, Ill.

GENERAL:

Information Letter, no. 2066, Feb. 10, 1965 (Convention Issue), 71 pp., illus., printed, limited distribution. National Canners' Association, 1133 20th St. NW., Washington, D. C. Includes the report on the symposium, "Three views of the American fishing industry" consisting of these articles: "The conservation of our coastal fishery resources," by E. L. Bartlett; "Some U. S. international fishery problems and international rules dealing with fisheries," by William C. Herrington; and "The American fishing industry--1964," by Donald L. McKernan. Also contains, among others, a symposium on "Food laws and regulations, present and future" consisting of articles on: "Uniformity of food laws and regulations--today and tomorrow," by J. L. Littlefield; "FDA standards, research and pesticide programs," by Lowrie M. Beacham, Jr.; and "FDA inspection and voluntary compliance programs--their relationship to industry," by Franklin D. Clark.

GREECE:

Market Factors in Greece, by John J. Eddy, OBR 65-5, 8 pp., printed, Jan. 1965, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) In addition to market outlook in Greece, the report discusses the scope and nature of the market, commercial competition, market analysis for selected commodities, and a market profile for the country.

HALIBUT:

Halibut--Treasure of the Deep, 30-minute color film. Executive Secretary, Halibut Association of North America, 66 Marion St., Seattle, Wash. 98104. Pictures halibut fishing in the cold waters of the North Pacific. In contrast to the rough and hazardous life aboard a halibut vessel, other scenes portray the serving of halibut steaks in a restaurant. The film

also shows various ways of preparing and serving halibut at home; in the dining room as well as at a cook-out. The versatility of halibut cookery and ease of preparation are emphasized. The film is available free for television programs, and for showing before women's clubs, home economics classes, and other school and college groups.

HERRING:

"Biology of the herring, *Clupea harengus membras* (L.) in the Aral Sea," by N. E. Bykov, article, *Sbornik Rabot po Ikhtiologii i Gidrobiologii*, vol. 3, 1961, pp. 185-196, printed in Russian. Institut Ikhtiologii i Rybnogo Khozyaistva, Akademiya Nauk, Kazakh SSR, Alma Ata, Kazakh SSR.

"Serology of Atlantic Clupeoid fishes," by C. J. Sindermann, article, *American Naturalist*, vol. 46, no. 889, pp. 225-231, printed. The Science Press, Lancaster, Pa.

"Tilraunir med súldardælu og súldarflutninga" (Experiment with loading and unloading herring), by Harald Asgeirsson and Hjalta Einarsson, article, *Aegir*, vol. 57, no. 22, Dec. 15, 1964, pp. 439-446, illus., printed in Icelandic. Aegir, Fiskifelag Islands, Reykjavik, Iceland.

INDIA:

Annual Report of the Department of Fisheries, Maharashtra State, Bombay, for the Year 1961-62, 62 pp., illus., printed. Department of Fisheries, Maharashtra State, Bombay, India. Reviews accomplishments of the Maharashtra State Department of Fisheries during the year 1961/62 and highlights the principal events in the fisheries, including devastation caused by a cyclone and floods, and effects of a fish famine. Discusses the marine fisheries; provisions for the fishing industry contained in the Third Five Year Plan; financial assistance to the fish trade; landings, navigation, and harbor facilities; and preservation, transport, and marketing. Also includes information on the fish curing yards, Taraporevala Aquarium and research, fisheries schools and training, cooperative societies and socio-economic development, freshwater fisheries, and technological section projects. Contains statistical data on trawler landings by month and type of fish; fresh fish shipments into Bombay; landings by Government of India deep-sea vessels; arrivals of fish at Greater Bombay markets; salt fish production; and financial statement on shark-liver oil manufacture.

INDONESIA:

Foreign Trade Regulations of Indonesia, by M. Virginia Webbert, OBR 65-3, 12 pp., printed, Jan. 1965, 15 cents. Bureau of Foreign Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Indonesia's import controls are exercised primarily for balance-of-payments purposes. Export controls are applied mainly to insure surrender of exchange proceeds, but they also serve to avoid commodity shortages for domestic consumption. In addition to trade policy, the report discusses Indonesia's import tariff system, shipping documents, marking and labeling requirements, and special customs provisions. Also covers nontariff import controls, Indonesia's export controls,

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import surcharge, and additional levies; United States foreign trade controls, and Government representation between that country and the United States.

INTERNATIONAL COMMISSIONS:

(International North Pacific Fisheries Commission) Annual Report, 1961, 131 pp., illus., printed, 1964. International North Pacific Fisheries Commission, 6640 NW. Marine Dr., Vancouver 8, B. C., Canada. This is the eighth consecutive annual report of the activities and achievements of the International North Pacific Fisheries Commission, established by a Convention between Canada, Japan, and the United States on June 12, 1953, for the purpose of promoting and coordinating the necessary scientific studies and to recommend the required conservation measures in order to secure the maximum sustained productivity of fisheries of joint interest. The report contains summary accounts of the annual meeting of the Commission held in Tokyo, November 6-11, 1961; and a brief resume of administrative activities during the year. It also presents summaries prepared by the national research agencies of investigations which they carry out under the planning and coordination of the Commission. Of principal concern are the salmon and king crab fisheries.

IRRADIATION PRESERVATION:

"Effects of radiopasteurization on fish and shellfish," by Kinjiro Yamada, article, Chemical Abstracts, vol. 60, May 11, 1964, Abstract No. I2581e, printed, American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

Food Preservation by Irradiation, by Grace M. Urrows, one of a Series on Understanding the Atom, 38 pp., illus., printed, Oct. 1964. U. S. Atomic Energy Commission, P. O. Box 62, Oak Ridge, Tenn. 37831. Presents information on the potential of irradiation and the world-wide interest in this process; preservation of man's food by drying, fermentation, canning, and freezing; how food spoils--food poisoning, botulism; and radiation--a new technique (ionizing radiation and how it works, research history, testing for wholesomeness, Government clearance, appearance and taste, and packaging). Also discusses testing programs and devices--AEC "family of irradiators," source selection, U. S. Army Radiation Laboratory, and the goal of commercial development; preserving the taste of the orchard; fruit-stand economics of the future; and total impact of food irradiation (nutritional knowledge increase); use of sterilized food in the civilian economy; and public acceptance. A chapter on fresh fish every day covers the radiation pasteurization of clams and haddock, crab meat, and shrimp. And a chapter on potential market for irradiated fish discusses changing distribution practices, cost factors, and ease of retail handling.

"L'irradiation des poissons" (Irradiation of fish), article, La Revue de la Conserve, vol. 18, no. 7, 1963, p. 340, printed in French, Societe d'Edition pour l'Alimentation, 1 Rue de la Reale, Paris I, France.

"Radiation preservation of New England seafoods," by Joseph W. Slavin, Maynard A. Steinberg, and Louis J. Ronsivalli, article, Isotopes and Radiation

Technology, vol. 1, no. 4, Summer 1964, Section II--Radiation Processing of Foods, pp. 317-322, illus., printed, U. S. Atomic Energy Commission, Washington, D. C. 20545. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.)

The following are from Radiation Pasteurization of Foods, TID 7684, 1963. Technical Information Division, U. S. Atomic Energy Commission, Washington, D. C. 20545:

"Radiation pasteurization of Pacific crab and flounder," by D. Miyauchi, pp. 32-37.

"Study of the basic microbiological and biochemical factors involved in the irradiation preservation of marine products," by A. M. Dollar, pp. 98-104.

"Study of radiation pasteurized fishery products," by L. J. Ronsivalli and J. W. Slavin, pp. 20-27.

ISRAEL:

Selling in Israel, by Joseph D. McLaughlin, OBR 65-1, 8 pp., illus., printed, Jan. 1965, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) United States-made products are building a reputation in Israel for reliability, versatility, quality, modernity, and ease of maintenance. The report explains the road to selling: representation; direct selling; import requirements; distribution practices; and transportation, port, and storage facilities. Also presents details on commercial practices; marketing aids; Government procurement; selling under United States programs; and helpful information for business travelers on currency, hotel accommodations, and climate.

KENYA:

Report on Kenya Fisheries, 1963, 34 pp., printed, 1964, 3s. (about US\$0.45). Ministry of Forest Development, Game and Fisheries, Fisheries Division, Nairobi, Kenya. Contains information on work accomplished in the inland fisheries of the Western Region; the Lake Victoria fisheries; the fisheries of Lakes Naivasha and Baringo; the trout hatchery; the trout fisheries; the Turkana fishery at Ferguson's Gulf, Lake Rudolf; and the fish culture farm. Also discusses the sea fisheries--North Coast-Kiunga, North Coast-Lamu, Malindi, South Coast, loans to fishermen, gear development--trawling experiments, turtles, the sedentary fisheries (shellfish), big game fishing, and the Coral Garden fish reserves. Included are statistical tables showing quantity and value of the Malindi fishery for demersal and pelagic species, sharks, spiny lobster, and other fish, 1958-63; earnings of 3 Lake Balisa fishermen in one week; imports and exports of fishery products, by type; estimated fish landings on the Kenya coast, 1956-63; results of Japanese shrimp trawling; the Lake Victoria fisheries; and total landings and ex-vessel value of fish in Kenya, 1963.

LAW OF THE SEA:

"A code of conduct for the fishing grounds," by Lawrence A. White, article, United States Naval Institute Proceedings, vol. 91, no. 3, March 1965, pp. 76-82, illus., printed, single copy 75 cents. United States

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Naval Institute, Annapolis, Md. Since there is as yet no control over much of the fishing activity on the high seas, there is growing concern not only for depletion of species but also for the number of incidents involving use of force by fishermen on each other. Internationally, there seems to be general understanding concerning the extent of a state's sovereignty over the territorial sea (at least up to a three-mile width) and what particular jurisdiction can be applied in the contiguous zone (at least up to 12 miles from baselines). There is even substantial agreement on a coastal state's rights in or on its continental shelf. In matters concerning fishing rights, however, substantial disagreement still exists. The most urgent problem seems to be the devising of a code of conduct to be applied by fishermen, regardless of their right to fish in an area. The question of fishing rights and quotas can only be answered by logical use of scientific facts concerning both conservation measures and national needs. Just as we have joined together in the United Nations for our common peace and security, we must unite to produce an orderly regime for the high seas, territorial seas, and related areas, asserts the author.

LOBSTERS:

Lobster Storage and Shipment, by D. W. McLeese and D. G. Wilder, Fisheries Research Board of Canada Bulletin No. 147, printed, 1964, C\$1.75. Queen's Printer, Ottawa, Canada.

MASSACHUSETTS:

The Massachusetts Marine Fisheries Advisory Commission, by Robert F. Hutton and Frederick C. Wilbour, Jr., Educational Series No. 1, 23 pp., illus., processed, 1964. Massachusetts Division of Marine Fisheries, 15 Ashburton Pl., Boston, Mass.

MULLET:

A Bibliography of Systematic References to the Grey Mullet (Mugilidae), by J. M. Thomson, Technical Paper No. 16, 128 pp., processed, 1964. Division of Fisheries and Oceanography, Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia.

NETS:

"Een beter garnalennet" (Better shrimp net), by R. Boddeke, article, *Visserij-Nieuws*, vol. 8, no. 1, Jan. 1965, pp. 2-8, illus., printed in Dutch. Directie der Visserijen, 1e van den Boschstraat 4, 's-Gravenhage, Netherlands. Describes a French-developed net for shrimp. The net strains out immature flat fish. It is expected that use of this type of net will permit intensive shrimp fishing without damage to flat fish stocks.

NEW JERSEY:

Annual Report of the Division of Fish and Game for the Fiscal Year Commencing July 1, 1963 and Ending June 30, 1964, 64 pp., illus., printed, New Jersey Department of Conservation and Economic Development, Trenton, N. J. 08625. Contains sections detailing work in administration, law enforcement, the Bureau of Wildlife Management, and the Bureau of Fisheries Management. The section on fisheries discusses activities of the Freshwater Research and Development Section in trout management and

research, warm-water fisheries research, warm-water management, pollution studies, and habitat improvement; the Marine Fisheries Research and Development Section; State fish hatcheries; and commercial fishing. Included are statistical data on hatchery fish distributed, raised, and on hand, 1964 season; landings from fish pounds, 1963; total New Jersey commercial catch; and stocking of New Jersey streams and lakes, Fiscal Year 1964.

NORWAY:

"Norwegian outfit in world fisheries," article, *Norwegian Fishing and Maritime News*, vol. 11, no. 4, 1964, pp. 7-8, printed. *Norwegian Fishing and Maritime News*, P. O. Box 740, Slottsgt. 3, Bergen, Norway. The Norwegian export of vessels, gear, equipment, processing machinery, and "know-how" for the fishing industry have shown quite a remarkable increase the last few years. Value of exports rose from £1.8 million in 1960 to £7.0 million in 1963 and were expected to reach £10 million in 1964. In 1963 Norway imported fishing equipment and gear with a total value of £9 million. Principal export markets are Iceland, Sweden, Denmark, Peru, Chile, and West Germany. Fishing vessels, representing 30 percent of the total exports, are being built in about 75 Norwegian yards. One firm is now delivering seven 231-foot stern trawlers with freezing facilities for Ghana, while another will soon launch a fleet of eight shrimp trawlers and a mothership for a Kuwaiti company. The Government has contributed considerably to fishery projects in the developing countries, where expanded fisheries are needed to meet the protein needs of a growing population.

NUCLEAR REACTORS:

Power Reactors in Small Packages, by William R. Corliss, one of a Series on Understanding the Atom, 28 pp., illus., printed, June 1964. U. S. Atomic Energy Commission, P. O. Box 62, Oak Ridge, Tenn. 37831.

OCEANOGRAPHY:

Abyss (The Deep Sea and the Creatures That Live In It), by C. P. Idyll, 414 pp., illus., printed, 1964, \$6.95. Thomas Y. Crowell Co., 201 Park Ave. S., New York, N. Y. 10003. Man has used the sea as a means of travel and a source of food for centuries, but it is only recently that he has come to realize that there is much more to it. This book describes the physical, chemical, and dynamic characteristics of the ocean waters and its boundaries which mold and influence all life in them. In spite of the fact that man has fished a small part of the sea and explored it in a tentative way, the deep sea that makes up nine-tenths of the water of the oceans is still a vast unknown. How this creates mystery is ably pointed out by the author: "The deep sea is pitch black, without the least glimmer of the sun's rays to give it cheer; it is cold, only a little above freezing; it is under enormous pressure, with power to crush to a shapeless mass any body not constructed to combat it; . . ." This is a general account of the deep sea for the non-scientist. The author tells us what is known about this vast unknown, but he also points out what is not known. After theorizing about the birth of the oceans, the author describes the land beneath the sea with its mountains higher than Everest, valleys deeper than the Grand Canyon, and its great submerged rivers.

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A good part of the book is devoted to the "grotesque and improbable" creatures of the deep sea, such as fish that are all mouth; the six-foot urn-shaped sponge; the South Sea worm that spawns precisely at the third-quarter of the November moon; the poisonous jellyfish; the brilliant scarlet shrimp; the hideous octopus and squid that squirt ink; the luminous angler that entices its prey with gleaming and flickering colored lights; and the fossil remnants of ancient life. All these would be unbelievable except that the more than 100 photographs and drawings show that some of the creatures are even more grotesque than we could imagine. Also covered are: sea monsters; how the environment of the deep sea (cold, darkness, pressure) molds the creatures that live there; the economic value of the deep sea as a source of food, power, minerals, and a weapon of national defense; and the future of oceanography. An appendix includes a classification of the animals mentioned in the book and a list of more books about the sea. To increase its usefulness, it has a good index. In the years to come, the sea will exert more influence on man. This book will be of value to anyone interested in gaining some understanding of that vast unknown--the deep sea.

-- J. Pileggi

International Indian Ocean Expedition Newsletter, India, vol. 2, no. 2, Sept. 1964, 28 pp., illus., printed, Indian National Committee on Oceanic Research, Council of Scientific and Industrial Research, New Delhi, India. Includes, among others, articles on: "Nehru and ocean research"; "Indian Programme: scientific cruises of INS *Kistna*"; "Indian Ocean Biological Centre, Ernakulam"; "International Meteorological Centre, Bombay"; "Third IOC session in Paris"; and "Second meeting of the IOBC Consultative Committee."

The Mine Defense Laboratory as an Oceanographic Center, Report No. RAD R244, 29 pp., printed, Oct. 1964, Navy Mine Defense Laboratory, Panama City, Fla. In spite of intense effort on strictly military problems, interesting observations have been made on natural phenomena, hypotheses and conjectures have arisen requiring theoretical solutions, and equipment for special purposes had to be designed and tested. As a result, data, analyses, and inventions of purely scientific value have been generated and become part of the literature of oceanography. This report documents the belief that sufficient contributions have been made to basic oceanography in the form of publications, papers presented at scientific meetings, technical notes, memoranda, and reports to warrant giving consideration to placing the Laboratory firmly on the list of the world's active and productive oceanographic centers.

Narrative Report: "Anton Bruun" Cruise 8, U. S. Program in Biology, International Indian Ocean Expedition, News Bulletin No. 10, 17 pp., illus., processed, Feb. 1965, Woods Hole Oceanographic Institution, Woods Hole, Mass.

Oceanographical Observations in the Indian Ocean in 1962, H. M. A. S. *DIAMANTINA* (Cruise Dm 1762), Oceanographical Cruise Report No. 14, 131 pp., illus., processed, 1964, Division of Fisheries and Oceanography, Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia.

Operational Notes on a Shipboard Computer, by Richard M. Morse and Robert M. O'Hagan, Oceanographic (Unpublished Manuscript), 11 pp., processed, Oct. 15, 1964, U. S. Coast Guard Oceanographic Unit, Washington, D. C. 20220.

Serial Atlas of the Marine Environment--Surface Circulation on the Continental Shelf Off Eastern North America between Newfoundland and Florida, by Dean F. Bumpus and Louis M. Lauzier, Folio 7, 15 pp., illus., printed, 1965, looseleaf \$5, bound \$8. Serial Atlas of the Marine Environment, American Geographical Society, Broadway at 156th St., New York, N. Y. 10032. Presents the nontidal drift at the ocean's surface on the continental shelf off eastern North America between Newfoundland and Florida as inferred from the results of all available drift-bottle data, 1948-62. Twelve charts, one for each month, exhibit the annual cycle of circulation. On the basis of a 30-foot rectangular grid, the charts show where drift bottles were released, the percentage recovery from each rectangle to the North American seaboard, and the velocity of the drift through those rectangles from which the bottles originated. Four final charts portray the surface circulation pattern on a seasonal basis.

A Study of Transmission of Weather and Oceanographic Data from Floating Weather Stations, by W. J. Fay, D. R. Munoz, and S. Weisbrod, Report No. 416, 56 pp., printed, Oct. 1964, Smyth Research Associates, San Diego, Calif.

The following are from Physical Aspects of Light in the Sea, edited by J. E. Tyler, University of Hawaii Press, Honolulu, Hawaii:

"Application of photography to observations in the sea," by H. E. Edgerton, pp. 31-35.

"Degeneration of image contrast and resolution in underwater photography," by A. May and P. H. Cords, Jr., pp. 25-29.

"On the instruments for measuring angular distributions of underwater daylight intensity," by T. Sasaki, pp. 19-24.

"Measurement at sea of water samples," by A. Ivanoff, pp. 11-17.

"Optical classification of ocean water," by N. G. Jerlov, pp. 45-49.

"An undersea observation vessel *Kuroshio* and its photographic apparatus," by N. Inoue and others, pp. 7-10.

OYSTERS:

"Bacteriological survey of an oyster bed in Tangier Sound, Maryland," by M. W. Vaughn and A. W. Jones, article, *Chesapeake Science*, vol. 5, no. 5, winter 1964, pp. 167-171, illus., printed, single copy 75 cents, Natural Resources Institute, University of Maryland, Chesapeake Biological Laboratory, Solomons, Md.

Field and Laboratory Studies on Heat-Shock Method of Preparation of Oysters for Shucking, 27 pp., illus., processed, Nov. 1964, Gulf Coast Shellfish Sanitation

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Research Center, Division of Environmental Engineering and Food Protection, Public Health Service, U. S. Department of Health, Education, and Welfare, Dauphin Island, Ala. The heat-shock method of preparing oysters for shucking, as indicated by the results of this study, shows a definite trend in a reduction in the parameters which are normally used in assessing the bacterial quality of shellfish. Oysters that have been immersed at 140° F. for 5 minutes, at 150° F. for 3 minutes do not appear to be altered metabolically or physically to such an extent that the oyster could not be considered to be fresh. The use of 150° F. heat-shock temperature and an immersion time of not more than 3 minutes, with an immediate chill-down after removal from the immersion water, as a method of preparing oysters for shucking seems to offer no immediate public health problems over the normal cold shucking method. However, there appears to be a need for establishing sanitary control measures in the shucking bench area to prevent the holding of heat-shocked oysters for excessively long periods.

"Serological studies of species and races in oysters," by K. I. Numachi, article, *American Naturalist*, vol. 46, no. 889, pp. 211-217, printed, The Science Press, Lancaster, Pa.

PACIFIC OCEAN:

Proceedings of the Ninth Pacific Science Congress of the Pacific Science Association, Held at Chulalongkorn University, Bangkok, Thailand, November 18th to December 9th, 1957, Vol. 10--Fisheries, 100 pp., illus., printed 1961, Secretariat, Ninth Pacific Science Congress, Department of Science, Bangkok, Thailand. Includes, among others, articles on: "Report of the Chairman of the Standing Committee on Pacific Fisheries," by O. E. Sette; "A review on fisheries activities in Thailand for the period 1954 to 1957," by Thiemmedh Jinda; and "Summary report of the meeting of the Fisheries Division." Among the papers for the Symposium on Biology of Aquatic Animal Life with Special Reference to the Indo-Pacific Area is: "Flying fishes of the northwestern Pacific," by N. V. Parin. Papers for the Symposium on New or Little Explored Aspects of Fishery Research include: "Some relationships within fish populations causing fluctuations in production," by H. S. Swingle; "Dimensions of albacore shoals in the Pacific Ocean," by Toshiro Kuroki; "Pacific salmon: ocean stocks and fishery developments," by Ferris Neave; "A hypothesis of the population biology of the sardine, *Sardinops caerulea*," by John C. Marr; and "On the biological basis of fishery in the western Pacific," by P. A. Moiseev. The Symposium on the Improvement and Management of Natural Inland Waters and Impounded Waters includes: "Some scientific aspects of fish culture in ponds," by G. A. Prowse; and "The public health significance of the recent outbreaks of poisonings by marine organisms in Japan," by Bruce W. Halstead, Toshiharu Kawabata, and Thomas F. Judefind.

PESTICIDES:

Pesticides in Soil and Water, an Annotated Bibliography, compiled by Richard E. Thomas, Jesse M. Cohen, and Thomas W. Bendixen, Public Health Service Publication No. 999-WP-17, 94 pp., printed, Sept. 1964, Engineering Section, Basic and Applied Sci-

ences Branch, Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio 45226.

POLAND:

Polish Sea Fisheries Development, by Andrzej Niegolowski, 33 pp., printed, 1963. (Reprinted from Polish Western Affairs, vol. 4, no. 2, 1963.) Instytut Zachodni, Stary Rynek 2, Poznan, Poland. Part I discusses the world fisheries. The increasingly acute problem of feeding the world population has made into a paramount issue the utilization of the resources of the seas and oceans as a source of protein. A qualitative increase in the development of exploitation of the sea must in its final form lead to a change in the character of economic activity from a mere exploitation of sea resources, even if controlled and restricted by passive methods, to production in the form of farming of the sea. Sea fisheries, although producing markedly increased catches in the last few decades, have not developed at the same rate in all countries; their growth has varied according to region. There has been no increase in sea catch in Europe and North America; the increase has been shown mostly by countries of other continents. The lack of animal protein still occurring in many countries may be covered much more quickly and at a lower cost by the utilization of all the protein resources in the seas than by increasing livestock production. Part II details the fisheries development of Poland. Two main periods can be seen in the development of Polish sea fisheries after World War II: during the first, from 1945 to 1949, there was a need to put quickly into operation the destroyed technical base indispensable for landing fish. But even at that time preparatory work was started for the further development of sea fisheries. The second period was initiated on the basis of the Six Year Plan (1950-55) and the successive long-term plans. The rapid development of shipyards and industry made it possible to design and build a modern fishing fleet, while the investment in the fishing ports and the construction of the necessary auxiliary enterprises and processing plants created a technical base for expansion of the fishing industry, indispensable to the Polish economy as a whole. The long-term plan for the development of the Polish sea fisheries provides for a catch of about 900,000 tons of fish in 1980. This quantity will make it possible to raise the annual consumption of fish in Poland to 12-13 kg. (26.4-28.6 pounds) per capita, providing nourishment of full value and at medium cost.

Selected Articles, OTS 63-11402, 28 pp., illus., processed, 1964, 50 cents. (Translated from the Polish, Roczniki Panstwowego Zakladu Higieny, vol. 8, no. 5, 1957, pp. 481-493; vol. 10, no. 4, 1959, pp. 395-402; vol. 11, no. 4, 1960, pp. 329-334.) Office of Technical Services, U. S. Department of Commerce, Washington, D. C. 20230. Includes articles on: "Tin and iron contents in some Polish canned fish" (O zawartosci cyny i zelaza w niektórych polskich konserwach rybnych), by Jozef Wierzchowski and Maria Severin; "Control of fish processing stages. I--Herring in oil"; II--"Bullhead" in tomato sauce (Kontrola cyklow produkcyjnych w przetworstwie rybnym. I--Sledz w oleju; II--"Byczki w pomidorach), by Jozef Wierzchowski and Others.

PROCESSING:

"Basis of new forms of wastes and losses in commercial fish processing," by N. I. Goremykina, article,

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Trudy AzCherNIRO, vol. 21, 1961, pp. 29-31, printed in Russian. Azovo-Chernomorskii Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaistva i Okeanografii, Moscow, U.S.S.R.

RESOURCE CONSERVATION:

Coastal Alterations, by Robert F. Hutton, Educational Series No. 2, 8 pp., processed, 1964, 5 cents. Massachusetts Division of Marine Fisheries, 15 Ashburton Pl., Boston, Mass.

SALMON:

"Distribution, growth, and food of young salmon in the rivers of the Latvian S. S. R.," by A. R. Mitans, article, Rybnoe Khozyaistvo Vnutrennykh Vodemov Latv. SSR, vol. 7, 1963, pp. 309-317, printed in Russian. Trudy Institut Biologii Akademii Nauk Latv. SSR, Riga, Latvia.

"Nutrition of salmonoid fishes. XII--Isoleucine, leucine, valine and phenylalanine requirements of chinook salmon and interrelations between isoleucine and leucine for growth," by Ronald E. Chance, Edwin T. Mertz, and John E. Halver, article, Journal of Nutrition, vol. 83, July 1964, pp. 177-185, printed. American Institute of Nutrition, 36th St. at Spruce, Philadelphia 4, Pa.

Pacific Salmon in the Northern Waters--Species and Life-History, by Tomonari Matsushita, No. 6-1, 36 pp., illus., printed in Japanese. Japan Fisheries Conservation Association, Shiba Nishikubo Sakuragawa-cho, 24, Minato-ku, Tokyo, Japan.

"Pacific salmon survive in Atlantic," by J. J. Quigley, article, Trade News, vol. 17, no. 6-7, Dec. 1964-Jan. 1965, pp. 3-5, illus., processed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada. Noteworthy in 1964 was the return of Pacific salmon, offspring of pinks transplanted as eggs to a Newfoundland stream from British Columbia in 1962. The authentic returns occurred in St. Mary's Bay from 2.5 million eggs airlifted and transplanted in North Harbour River. Fresh-water survival from the first transplant was excellent, with a fry run of 87 percent. First indications that the mature fish were heading for the spawning grounds from which they had migrated came during the summer of 1964 when commercial fishermen reported strange fish in their catches which later proved to be pinks. Shortly after the captures in the commercial fishery the pinks began to show up in North Harbour River, and several "spents" were later recorded indicating successful spawning. Ultimate success in transplanting the pinks could well mean that in years to come Newfoundland fishermen will have available a species that plays an important part in the fisheries of British Columbia, a species that could take the pressure off the intensively fished Atlantic salmon.

Southeastern Alaska Pink Salmon Forecast Studies, Pre-Emergent Fry Program, by Theodore C. Hoffman, Informational Leaflet 47, 29 pp., illus., processed, Jan. 28, 1965. Department of Fish and Game, Support Bldg., Juneau, Alaska.

SARDINES:

Life History of Japanese Sardine, SARDINOPS MELANOSTICTA (Temminck and Schlegel), and a Pro-

posed Methodology on the Investigations, by Keiichi Kondo, No. 5, 56 pp., illus., printed in Japanese. Japan Fisheries Resource Conservation Association, Shiba Nishikubo Sakuragawa-cho, 24, Minato-ku, Tokyo, Japan.

"A pesca de sardinha em 1964 e a modernizacao de frota" (The sardine fishery in 1964 and the modernization of the fleet), article, Jornal do Pescador, vol. 26, no. 310, Nov. 1964, single copy 5 escudos (about 20 U. S. cents). Junta Central das Casas dos Pescadores, Rua de S. Bento, 644-4^o Esq., Lisbon, Portugal.

"Technochemical properties of the Atlantic sardine and the causes of decrease in quality in commercial processing," by G. S. Khristoferzen and N. V. Timofieva, article, Trudy AzCherNIRO, vol. 21, 1961, pp. 40-46, printed in Russian. Azovo-Chernomorskii Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaistva i Okeanografii, Moscow, U.S.S.R.

SAURY:

Biological Studies and Fisheries of the Saury, COLO-LABIS SATRA (Brevoort), by Hideyuki Hotta, No. 4, 96 pp., illus., printed in Japanese. Japan Fisheries Resource Conservation Association, Shiba Nishikubo Sakuragawa-cho, 24, Minato-ku, Tokyo, Japan.

SCALLOPS:

The following, printed in Japanese, are available from the Japan Fisheries Resource Conservation Association, Shiba Nishikubo Sakuragawa-cho, 24, Minato-ku, Tokyo, Japan:

On the Scallop in Okhotsk Sea, by Shigemi Ito, No. 7, 40 pp., illus.

Studies on the Propagation of the Scallop, PATINOPEC-TEN YESSOENSIS (Jay), in Mutsu Bay, by Gotaro Yamamoto, No. 6, 80 pp., illus.

SEA LAMPREY:

Variability in Paper Electrophoretic Patterns of the Serum of Landlocked Sea Lamprey, PETROMYZON MARINUS Linnaeus, by M. L. H. Thomas and H. R. McCrimmon, 8 pp., illus., printed. (Reprinted from Journal of the Fisheries Research Board of Canada, vol. 21, no. 2, 1964, pp. 239-246.) Queen's Printer and Controller of Stationery, Ottawa, Canada.

SHELLFISH:

"Cleaning up the shellfish," article, Maritimes, vol. 9, no. 1, winter 1965, pp. 10-12, illus., printed. Editor, Maritimes, Davis Hall, Kingston, R. I. The process of cleansing shellfish, called depuration, is a major subject of study at the Federal shellfish sanitation laboratory (the Northeast Research Center) which serves the east coast area from North Carolina to Maine. The depuration process may provide an important health-safety factor. The head of the laboratory explains that "We are obtaining biological data and developing engineering plans for a depuration facility. These plans can then be used by any group, public or private, interested in cleansing shellfish of pollution . . ." Already the laboratory has collaborated with the States of Maine, Rhode Island, and New York in developing new and improving existing depuration facilities. "Even though we can cleanse shellfish of bacteria and, hopefully, of viruses, there remain other materials potentially dangerous to

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human beings which cannot readily be removed by present processes. These include pesticides, radioactive materials and heavy metals such as zinc and lead, and many other man-made and contributed pollutants. Further study must be made on the significance of these contaminants," states the laboratory head.

Stalking the Blue-Eyed Scallop, by Euell Gibbons, 345 pp., illus., printed, 1964. David McKay Company, Inc., 225 Park Ave., New York, N. Y. 10017. An amusing and informative book describing the author's adventures in hunting shellfish, inshore fish, and edible marine plants. Included are the biology, preparation for cooking, and recipes for oysters, quahogs, crabs, blue-eyed scallops, razor and surf clams, blue mussel, whelks, sea urchins, cockles, pen shells, abalone, limpets, chitons, wild goose barnacles, grunions, sharks, and blowfish, edible seaweeds, sour sorrel, beach plum, bayberry, lobsters, and octopus. "Surely the way to approach true communion with the sea is the grateful reception of this free gift of food that has never been gathered for gain or sold at a profit, preparing it with the loving care that lifts cooking from an irksome task to a fine art, then eating it with a reverent awareness, not only of its taste, texture, and aroma, but also its very nature and origin," asserts the author in his introductory chapter.

SHRIMP:

"Biology of shrimps acclimatized in the Aral Sea," by A. S. Malinovskaya, article, *Sbornik Rabot po Ikhtologii i Gidrobiologii*, vol. 3, 1961, pp. 113-123, printed in Russian. Institut Ikhtologii i Rybnogo Khozyaistva, Akademiya Nauk, Kazakh SSR, Alma Ata, Kazakh SSR,

34 Ways to Make One-Dish Shrimp Meals, 11 pp., printed, Continental Sea Foods, Inc., 501 W. 16th St., New York, N. Y. 10011. Contains recipes for preparing frozen ready-to-cook small shrimp in a variety of dishes in 30 minutes. Tips are given for adding shrimp to avocado, spaghetti sauce, chow mein, soup, and salad. Included are recipes for shrimp in tomato, baked shrimp Florentine, shrimp stuffed tomatoes, shrimp sole casserole, curried shrimp with rice, baked shrimp in shells, shrimp Cantonese, broiled shrimp sandwich, shrimp Alfredo, and shrimp scramble.

SOMALI REPUBLIC:

Basic Data on the Economy of the Somali Republic, by Joseph Eblan, OBR 65-8, 16 pp., illus., printed, Feb. 1965, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) The Somali Republic prepared a Five Year Plan in 1963 which outlines improvement aims in every economic and social sector. The report presents details on geography and climate, form of government, and population; structure of the economy; agriculture; mineral resources; industry and power. Also includes information on transportation, communications, finance, foreign trade, a program for economic development, and marketing. A short section on fishing discusses Somalia's abundant fishery resources and the tuna canning and exporting industry.

SOUTH AFRICA REPUBLIC:

Industrial Censuses, 1950-51 to 1960-61. 1.--Preparation and Preserving of Meat; Sausage Casings, Tallow, Dripping and Lard; 2.--Crayfish; Fish Preserving and Other Fish Products, Report No. I. C. 1, 48 pp., processed in Afrikaans and English, Nov. 1964. Bureau of Statistics, Republic of South Africa, Pretoria, Republic of South Africa. This is the first of a series of reports showing the final results of the annual industrial census according to kinds of manufacturing industry. Detailed statistics are shown for each of the eleven census years from 1950-51 to 1960-61. It also contains provisional summary figures for the year 1961-62. Part 2, on spiny lobster processing, fish preserving and other fish products, presents data on ownership by private limited liability companies, number of establishments by employee size group, net output per employee and employment per establishment by employee size group, employment of working proprietors, employment by paid employees, and total salaries and wages for financial year. Also includes statistical tables on employment--production, maintenance, and related workers; employment--administrative, clerical, and sales personnel; payments in kind for financial year; cost of South African and imported materials for processing and packing; closing stocks; physical assets, depreciation, and rent paid; number of establishments and gross output, South Africa and provinces; number of establishments by industrial areas and certain economic regions.

SPAIN:

The following articles are from *Boletin de Informacion*, nos. 74-75, Nov. -Dec. 1964, printed in Spanish. Sindicato Nacional de la Pesca, 18-20 Paseo del Prado, Madrid, Spain.:

"Actividades de la Direccion General de Pesca Maritima. I--Presencia Española en los organismos internacionales relacionados con la pesca maritima; II--Concesiones y aprovechamientos; III--Expansion de la flota pesquera; IV--Aprovisionamientos a la flota pesquera; V--La ciencia y la pesca" (Activities of the Department of Marine Fisheries. I--Spanish membership in the international organizations related to marine fisheries; II--Concessions and developments; III--Expansion of the fishing fleet; IV--Outfitting of the fishing fleet; V--Science and the fisheries); pp. 5-15, illus.

"La evolucion pesquera en cifras" (Fishery development in figures), pp. 22-24.

SPORT FISHING:

"The economic aspects of sport fishing," article, *Trade News*, vol. 17, no. 6-7, Dec. 1964-Jan. 1965, pp. 6-13, illus., processed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada.

SQUID:

"Squid as seafood," article, *Fisheries Newsletter*, vol. 23, Aug. 1964, p. 23, printed. Fisheries Branch, Department of Primary Industry, Canberra, Australia.

STANDARDS:

The following Amendments to the Federal Food, Drug, and Cosmetic Act are available from the Food and Drug Administration, U. S. Department of Health, Education, and Welfare, Washington, D. C. 20201.:

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Fish Definitions and Standards, Part 37, Title 21, Code of Federal Regulations, 8 pp., printed. (Reprinted from the Federal Register: April 16, 1964; 29 F. R. 5225.)

Shellfish Definitions and Standards, Part 36, Code of Federal Regulations, 7 pp., printed. (Reprinted from the Federal Register: May 7, 1963; 28 F. R. 4556.)

STORAGE LIFE:

"Time-temperature tolerance of frozen seafoods. I--Review of some of the recent literature on the storage life of frozen fishery products," by J. Perry Lane, article, Food Technology, vol. 18, no. 7, July 1964, pp. 156-162, printed, single copy \$1.50, Food Technology, 510 N. Hickory St., Champaign, Ill. 61823.

STURGEON:

"Comparative evaluation of the costs of young of sturgeons under various methods of commercial breeding," by Yu. I. Zaidiner, I. Ya. Gol'dman, and F. V. Averkiev, article, Trudy AzNIIRKh, vol. 6, 1963, pp. 241-251, printed in Russian. Azovskii Nauchno-Issledovatel'skii Institut Rybnogo Khoz-yaistva, Moscow, U.S.S.R.

TAGGING:

The following reprints are from Journal of the Fisheries Research Board of Canada, vol. 20, no. 6, 1963. Queen's Printer and Controller of Stationery, Ottawa, Canada:

Spring Stainless Steel Anchor Tag, by G. H. Lawler, illus., p. 1553.

Use of Coloured Tags in Fish Population Estimates, by G. H. Lawler and G. F. M. Smith, pp. 1431-1434.

TRADE LISTS:

The U. S. Department of Commerce has published the following mimeographed trade lists. Copies may be obtained by firms in the United States from the Commercial Intelligence Division, Office of International Trade Promotion, Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. 20230, or from Department of Commerce field offices at \$1 each:

Canneries and Frozen Foods--Producers and Exporters--Japan, 24 pp., January 1965. Lists the names and addresses, size of firms, and types of products (including fish and shellfish) handled by each firm. Also contains trade and industry data (including fishery products) on production, exports, imports, and export control of canned, bottled, and frozen foods.

Oils (Animal, Fish and Vegetable)--Importers, Dealers, Producers, Refiners and Exporters--Norway, 12 pp., Jan. 1965. Lists the names and addresses, size of firms, and types of products handled by each firm. Includes firms dealing in fish, seal, and whale oils. Also contains trade and industry data (including fish and whale oils).

Oil (Animal, Fish and Vegetable)--Importers, Dealers, Producers, Refiners and Exporters--Peru, 12

pp., Jan. 1965. Lists the names and addresses, size of firms, and types of products handled by each firm. Includes firms dealing in fish oil, fish meal, and canned fish. Also contains trade and industry data (including fish oil).

TRAWLERS:

Medium Trawler, by Shinji Endo, No. 3, 56 pp., illus., printed in Japanese. Japan Fisheries Resource Conservation Association, Shiba Nishikubo Sakuragawa-cho, 24, Minato-ku, Tokyo, Japan.

TRAWLING:

"Influence of trawling speed on the parameters and the strain of the trawl net," by A. N. Samaryanov, article, Trudy Azovo-Chernomorskii Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaistva i Okeanografii, vol. 21, 1961, pp. 3-15, printed in Russian. Azovo-Chernomorskii Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaistva i Okeanografii, Moscow, U.S.S.R.

TURKEY:

Balik ve Balikcilik (Fish and Fishery), vol. 13, no. 1, Jan. 1965, 32 pp., illus., printed in Turkish with English table of contents. Et ve Balik Kurumu G. M., Balikcilik Mudurlugu, Besiktas, Istanbul, Turkey. Contains, among others, these articles: "Black caviar production and its problems in Turkey. Part II," by Cevdet Aygun; "Technological developments in the field of fish flour. Part II," by Hikmet Akgunes; and "The role of fish in animal feeding and nutritional contributions of fish products. Part I," by Macide Akgunes.

U.S.S.R.:

Kholodil'naiia Tekhnika, no. 6, 1964, 80 pp., illus., printed in Russian with English table of contents. Four Continent Book Corp., 822 Broadway, New York, N. Y. 10003. Includes, among others, articles on: "Leningrad Fish Storage Warehouse No. 4," by M. S. Ginburg, L. F. Rumyantsev, and S. V. Vinogradova; and "Investigation of time of freezing fish in blocks," by G. S. Konokotin.

VESSELS:

"Kongres panstw Socjalistycznych w sprawach floty rybackiej" (Congress of socialist countries on fishing fleet operations), by Andrzej Ropelewski, article, Gospodarka Rybna, vol. 17, no. 2 (164), 1965, pp. 3-5, printed in Polish. Gospodarka Rybna, Aleje Jerozolimskie 28, Warsaw, Poland.

WHALES:

"Blood types of some species of Antarctic whales," by K. Fujino, article, American Naturalist, vol. 46, no. 889, 1962, pp. 205-210, printed. The Science Press, Lancaster, Pa.

WHALING:

A Caccia de Balene (Whale Hunting), by Piero Pieroni, 150 pp., illus., printed in Italian, March 1964, L. 3,800 (about US\$6.10). Officine Grafiche Vallecchi Editore, Florence, Italy. A beautifully-illustrated book, using both full-color and black-and-white photos and drawings, giving the history of whaling and describing both modern and older whaling operations.

"Crisis in the whaling industry," by John Hillsby, article, New Scientist, vol. 23, Aug. 13, 1964, pp. 368-

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370, printed, Cromwell House, Fulwood Pl., High Holborn, London WC1, England.

YUGOSLAVIA:

Market Factors in Yugoslavia, by Arthur J. Laemmerzahl, OBR 64-140, 8 pp., printed, Dec. 1964, 15 cents. Bureau of International Commerce, U. S. De-

partment of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) In addition to market outlook in Yugoslavia, the report discusses the scope and nature of the market, commercial competition, market analysis for selected commodities, and a market profile for the country.



MIAMI SCIENTISTS DISCOVER NEW FAMILY OF FISH

A new family of extraordinary ocean fish has been discovered by biologists at the Institute of Marine Science, University of Miami. The discovery was announced April 1, 1965, in the Institute's scientific publication Bulletin of Marine Science.

The first representative of the new group to be seen by scientists was caught in a plankton net on August 7, 1964, in the western Atlantic, 150 miles due east of Cape Kennedy. The specimen was taken near midnight at a depth of about 60 feet and, remarkably, came aboard the ship alive and in excellent condition. Upon being placed in a laboratory aquarium aboard the research vessel John Elliott Pillsbury, the strange fish swam about vigorously while motion pictures and other photographs were made of its swimming behavior.

Solid black and about an inch long, the fish had a broad, flat head and enormous eyes. Attached to its underside was a long filament equipped with many leafy appendages. Each appendage displayed an oval luminescent spot. As the fish swam jerkily about the aquarium, the appendages streamed out behind. In the darkness only the orange spots on the appendages were visible, resembling a cluster of jellyfish-like animals known as siphonophores. Scientists suggest that the remarkable appendages may be used as a form of camouflage. Possibly the fish lives among groups of jellyfish or siphonophores (hundreds of jellyfish were caught in the same plankton tow with the strange fish) and is protected from predators by its mimicry of the stinging animals. Because of the form and structure of the fish's dangling appendages, the new fish has been given the common name of siphonophore fish, and the scientific name of Kasidoron edom. The family has been named Kasidoroidae. The fish is believed to inhabit regions from about 450 to 1500 feet deep during the day and to come near the surface at night.

Two other specimens of the family, both smaller than the one captured alive, were taken the same night in the same area. They were brought aboard dead, as is usually the case with midwater fish caught in nets. On examination of previous plankton catches made on the cruise, Institute scientists learned that a tiny specimen of the same group (an immature fish less than one-third of an inch long) had been netted four days earlier while the vessel towed plankton nets near a seamount 15 miles northeast of Bermuda.

"Finding a new family of fishes in this day and age is an extraordinary achievement," stated the Director of Miami's Institute of Marine Science. "It is particularly remarkable to find an entirely new group of fish in surface layers of water in the western Atlantic, where a great deal of scientific studies have been made . . ."

THIRD "TRAILERSHIP" ENTERS ALASKA SERVICE

In early April 1965, the 523-foot "trailership," S. S. Summit, entered service between Seattle, Wash., and Alaska ports, supplementing the service established in May 1964 by the trailerships Seattle and Anchorage. The Summit is a modified T-2 tanker which has been adapted to carry 198 35-foot truck trailers, including 60 refrigerated reefers. The Summit can carry more trailers than the other trailerships, but it lacks their break-bulk cargo capacity.



The S.S. Summit loaded with a cargo of truck trailers.

The trailerships are providing weekly service between Seattle and Alaska. Their reduced loading time allows delivery in Anchorage, Alaska, 4 days after loading in Seattle.

Note: See pp. 40-41 of this issue for details on the trailerships Seattle and Anchorage and also for a description of the vanships Nadina and Tonsina.



TUNA BECOMES MORE IMPORTANT ON ATLANTIC COAST

Commercial tuna fishing came of age in New England waters in 1962 when purse seiners caught over 7 million pounds. Then landings on the Atlantic coast in 1963 nearly doubled those of 1962, and accounted for 4 percent of the total United States tuna catch.

HONG KONG PRESTIGES

會長樂美部建

CRAB FOO YUNG

- 1 pound crab meat, fresh or frozen or
- 3 cans (6½ ounces) crab meat
- 6 eggs, beaten
- 1 can (1 pound) bean sprouts, drained

Thaw frozen crab meat or drain canned crab meat. Remove any remaining shell or cartilage from crab meat. Combine all ingredients except sauce and sesame seeds. Pour ½ cup crab mixture onto a hot greased griddle or frying pan. Fry about 2 minutes or until browned on the underside. Turn and fry about 2 minutes more or until bottom is browned. Drain on absorbent paper. Keep warm. Pour Foo Yung Sauce over patties and sprinkle with sesame seeds. Serves 6.

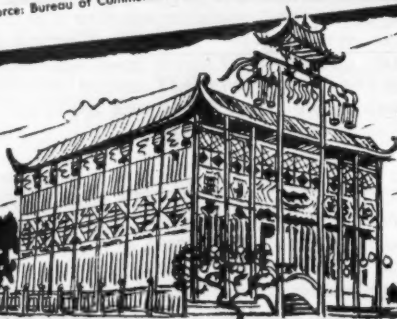
- ½ cup finely chopped green onions
- Dash pepper
- Foo Yung Sauce
- 1 tablespoon toasted sesame seeds

FOO YUNG SAUCE

- 2 chicken bouillon cubes
- ½ teaspoon sugar
- 2 cups boiling water

Dissolve bouillon cubes and sugar in boiling water. Dissolve cornstarch in soy sauce. Add to bouillon mixture and cook until thick and clear, stirring constantly.

Source: Bureau of Commercial Fisheries, U. S. Department of the Interior



Hong Kong Pavilion at New York's World's Fair.

--"World's Fair Seafood Fare," Special Fisheries Marketing Bulletin, issued by the U. S. Bureau of Commercial Fisheries as a part of its continuing consumer education program in cooperation with the commercial fishing industry.



HIGHLIGHTS IN THIS ISSUE (MAY 1965)



The Changing Outlook in United States Fisheries

BLUE CRAB--Cleaner-debaker machine points toward breakthrough for East Coast processors (page 12)

HAKE--Midwater trawling opens new fishing potential on the Pacific Coast (page 27)

SHRIMP--Electrical trawling tests (pages 21 and 37)

TUNA--Probing research on land and sea aims at a better catch for fishermen (pages 15 and 41)

FISH SPOTTING FROM BALLOONS--Novelty or Unique Solution? (page 18)

Also in this issue: Market and trade data--Reports on new vessels and new products--Summaries of State and Federal actions affecting fisheries--and news of fisheries research on all coasts

Reports on Foreign Fisheries

FOREIGN FISHING OFF UNITED STATES COASTS--Fishing Pressure off Alaska and in the North Atlantic (pages 1, 11, 24, and 85)

JAPAN: SHIFTING OF EMPHASIS--Buildup in trawling--Cutback in the tuna fleet (pages 69-80)

PLUS NEWS FROM OTHER KEY COUNTRIES--including reports on new vessels, catch data, trade summaries, and the outlook for 1965

AND REPORTS ON DEVELOPING COUNTRIES--including United Nations Special Fund Projects to aid fisheries in Argentina, Ghana, Pakistan, Central America, and East Africa.

ALSO A LIST OF RECENT FISHERY PUBLICATIONS FROM PRIVATE AND GOVERNMENT SOURCES THROUGHOUT THE WORLD



Skipjack tuna fishing on a Hawaiian sampan.

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